FIR-ULV600-DVR

User Manual

Version 1.0

POS+DVR

December 2005

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Chapter1 Introduction

1.1 Specification

1. Form Factor

Form

Dimension: W 188 x D 122 mm

2. Processor Compatibility

Processor

CPU Type: Intel Celeron-M Processors

Max. Speed: Celeron-M 600MHz

FSB: 400 MHz

Package: Micro-FCBGA

L2 Cache: 0KB

CPU Process: 90nm

3. Main Chipset

North Bridge

Controller Hub: i82852GM GMCH

FSB: 400 MHz

VGA:

Dual independent pipe support: Concurrent, Simultaneous

- VGA port
- LVDS panel support

Memory: DDR 200/266 MHz up to 1GB

Package: 732-pin Micro-FCBGA (37.5 x 37.5 mm)

Hub Interface (HI): 66 MHz (266-MB/s)

South Bridge

Controller Hub: i82801DB ICH4

PCI Compliant: PCI 2.2

Package: 421-pin BGA (31x31 mm)

PCI Bus: Supports up to six master devices on PCI

Other Feature:

- 6 USB 2.0 ports, 480MB/s
- IDE up to ATA 100 mode
- AC'97 2.3 CODEC support

- Power Management
- LPC interface to SIO and Flash BIOS
- SMBus 2.0

Firmware Hub: 4Mb Flash

4. Additional Chipset

LAN

Chipset: Realtek RTL8100BL

IEEE Compliant: IEEE 802.3u 100Base-T and IEEE 802.3x Full Duplex Flow Control

Audio

Codec: AC'97 2.3 CODEC ALC202A

Rear panel output: Line-out, MIC-in

Hardware Monitor

Chipset: LPC I/O W83627EHF for onboard alarm

Super I/O

Chipset: Winbond 83627EHF

Fan: CPU Fan / System Fan

Monitor Voltage: TBD

Serial I/O

Chipset: FINTEK F81216D

COM 3, 4, 5, 6

Power Management

ACPI Support: ACPI 1.0b and 2.0

APM Support: APM Rev 1.2 compliant power management

Others:

- SMRAM space remapping to A0000h (128-kB)
- Support extended SMRAM space above 256-MB, additional 1-MB TSEG from top of memory, cacheable (cache ability controlled by CPU)
- Support Suspend to System Memory, Suspend to Disk and Soft Off
- Enhanced Intel Speed Step technology support
- Optimized Clock Gating for 3D and Display Engines
- On-Die Thermal Sensor

Wakeup on LAN: TBD

Bootup Device

IDE device: Yes

Compact Flash: Yes

USB device: Yes

ACPI 2.0

1.2 Package Contents

Before any installation, please check if the following materials are included in the package:

- One FIR-ULV600-DVR all-in-one single board computer
- One compact disk for utility and drivers

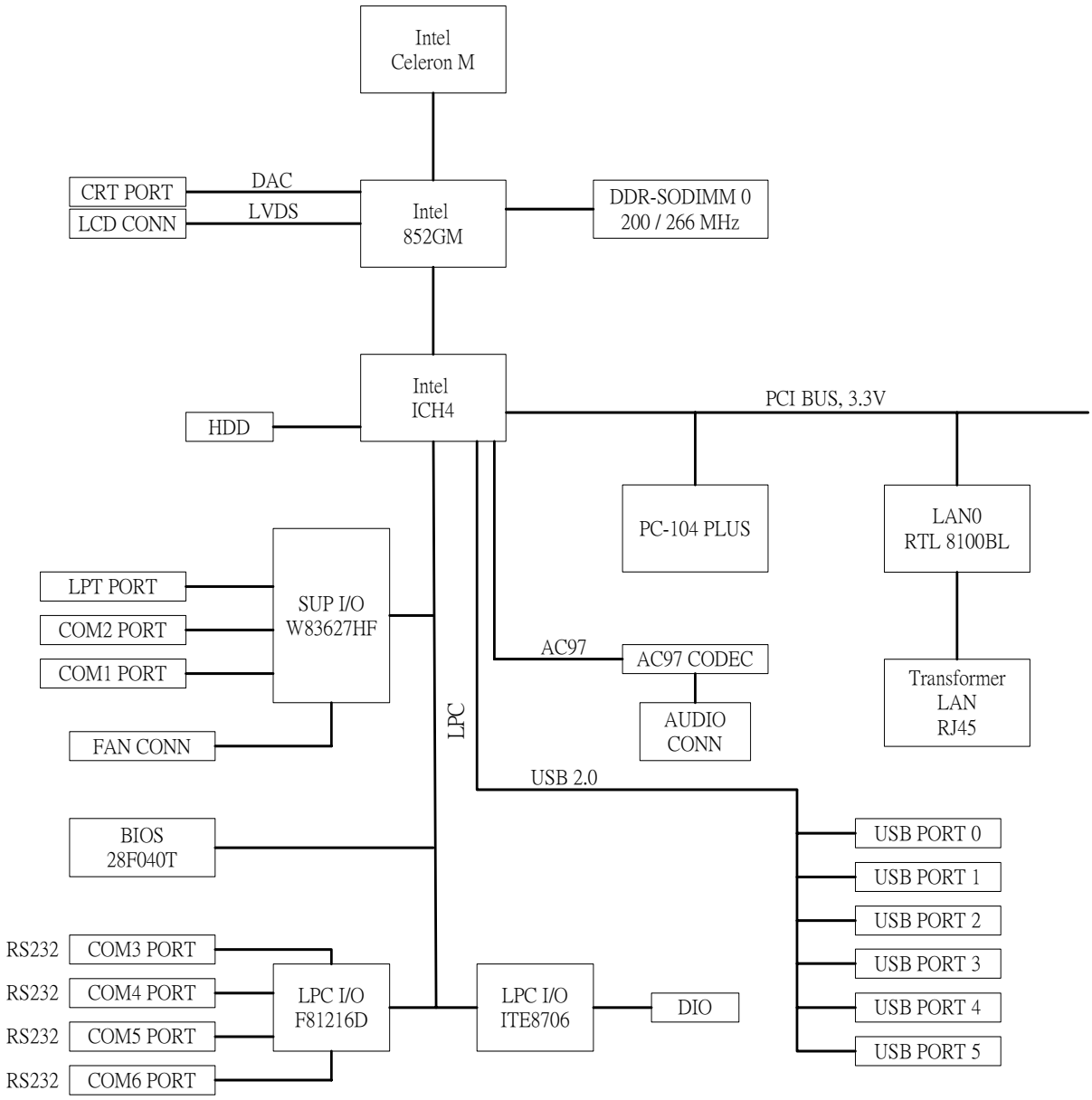
If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Chapter2 Installation

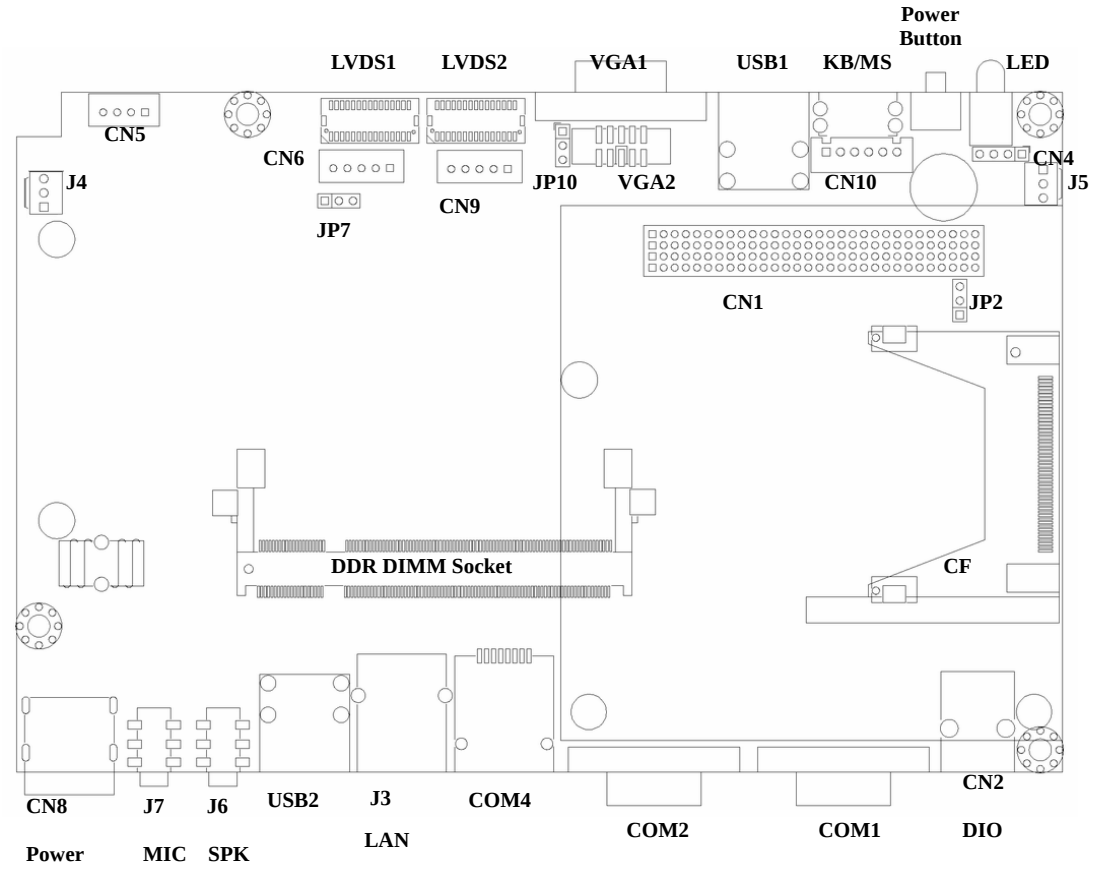
This chapter gives instructions about how to set up the FIR-ULV600-DVR hardware, including directions of setting jumpers and connecting peripherals, switches and indicators. Before installation, please pay attention to the unpacking precautions on the following page for safety.

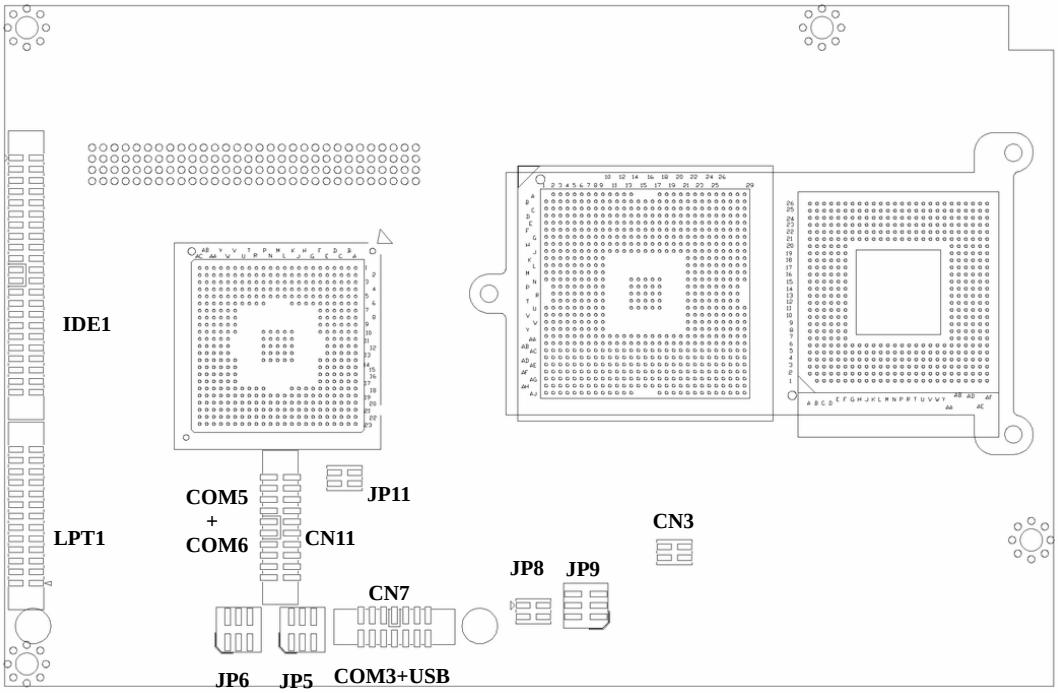
2.1 Block Diagram & Board Layout

2.1.1 Block Diagram



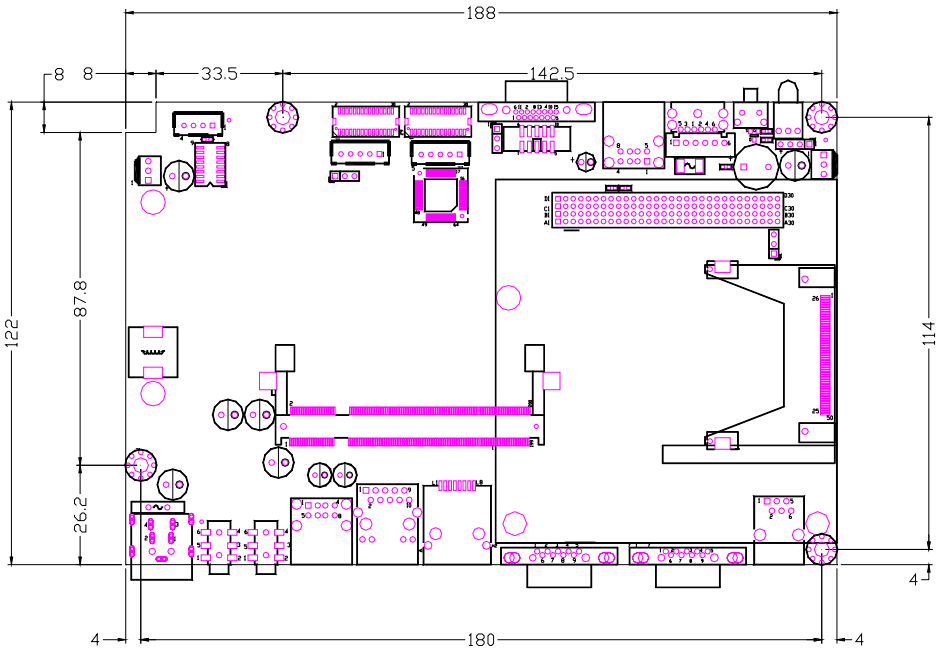
2.1.2 Board Layout





2.1.3 Board Dimension

- **FIR-ULV-600's Dimensions (Unit: mm)**



2.2 Unpacking Precautions

Some components of FIR-ULV600-DVR SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to note these precautions:

1. Ground yourself to remove any static charge before touching the FIR-ULV600-DVR SBC. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
2. Handle FIR-ULV600-DVR SBC by its edges. Don't touch IC chips, leads or circuitry if not necessary.
3. Do not plug any connector or jumper while the power is on.

2.3 System Memory DRAM

There are one 200-pin DDR SO-DIMM sockets to accept 2.5V non-buffered SDRAM. The max Memory size is 1GB.

2.4 Clear CMOS Setup

To clear the CMOS Setup (for example, if you have forgotten the password, you should clear the CMOS and then re-set the password), you have to close the JP2 (2-3) for about 3 seconds, and then open it. This will put the system back to normal operation mode.

- **JP2: Clear CMOS Setup**

JP2	
PIN STATE	**DESCRIPTION**
Short 1-2 (default)*	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

**Note: All shaded rows in the tables of this manual are the default settings.*

2.5 TFT LCD Setting

- **JP7/JP10: TFT LCD Voltage (5V / 3V) Setting**
  JP7 for LVDS1, JP10 for LVDS2

JP7 & JP10	
PIN STATE	**DESCRIPTION**
Short 1–2	3V TFT LCD
Short 2–3	5V TFT LCD

2.6 COM4 Voltage Selection

- **JP8: COM4 Voltage Selection**

JP8	
PIN STATE	**DESCRIPTION**
Short 1-2	+12V
Short 2-3	+5V

2.7 COM4 Mode Selection

- **JP9: COM4 Mode Selection**

JP9	
PIN STATE	**DESCRIPTION**
Short 1-2	CTS RTS short
Short 3-5	+12V/+5V output
Short 4-6	Ground output

2.8 COM2 RI Function Setting

- **JP5: COM2 RI Function Setting**

JP5	
PIN STATE	**DESCRIPTION**
Short 1-2	RI is +5 Voltage output
Short 3-4	RI function
Short 5-6	RI is +12 Voltage output

2.9 COM1 RI Function Setting

- **JP6: COM1 RI Function Setting**

JP6	
PIN STATE	**DESCRIPTION**
Short 1-2	RI is +5 Voltage output
Short 3-4	RI function
Short 5-6	RI is +12 Voltage output

2.10 Keyboard Data & Clock by pass

- **CN10: Keyboard Data & Clock by pass**

CN10	
PIN STATE	**DESCRIPTION**
Short 2-3	Clock by pass
Short 4-5	Data by pass

2.11 COM5 & 6 RI (CN11 pin8 & 18) Function Setting

- **JP11: COM5 & 6 RI Function Setting**

JP11	
PIN STATE	**DESCRIPTION**
Short 1-2	RI is +12 Voltage output
Short 3-4	RI is +5 Voltage output

Chapter3 Connection

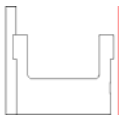
This chapter describes how to connect peripherals, switches and indicators to the FIR-ULV600-DVR board.

- **Table of Connectors**

LEBAL	FUNCTION
LVDS1 & 2	LVDS LCD Panel connectors
VGA1 & 2	VGA connectors
LAN	LAN RJ45 connector
USB1 & 2	USB dual port connectors
COM1, 2, 4, 5 & 6	Serial port connectors
KB_MS1	Keyboard & Mouse connector
J4 & 5	Fan connectors
J6	Speaker out phone jack connector
J7	MIC in phone jack connector
CN3	Speaker out pin header connector
LPT1	Parallel port connector
IDE1	Ultra ATA100 Primary IDE connectors
CF1	Compact Flash Storage Card Type II connector
PS_ON1	Power on Switch
LED1	Power LED
CN1	PC/104 Plus connector
CN2	Digital I/O with RJ-11 connector
CN4	Power SW/LED connector
CN5	Power output connector
CN6 & 9	LCD back light connectors
CN7	Multi-function connector
CN8	+12V DC power connector
CN10	Internal Keyboard connector
CN11	Serial port connectors

3.1 Compact Flash Storage Card Socket (CF1)

- **Compact Flash Storage Card Socket**

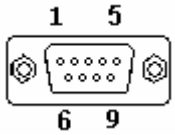


CF1			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GROUND	26	PULL DOWN
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	PULL DOWN	50	GROUND

3.2 Serial Port Connector (COM1, COM2, COM4, COM5 & COM6)

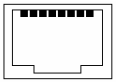
- **COM1 & COM2: D-SUB Serial Port Connectors**

COM1 & COM2			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	(DCD)	6	(DSR)
2	(RXD)	7	(RTS)
3	(TXD)	8	(CTS)
4	(DTR)	9	(RI or 5V or 12V)
5	GROUND	10	N/C



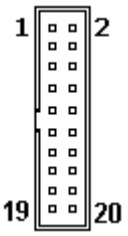
- **COM4: RJ45 Serial Port Connector**

COM4			
PIN NO.	DRSCRIPTION	PIN NO.	DESCRIPTION
1	+12/+5V	5	DTR
2	+12/+5V or CTS	6	DSR
3	GROUND	7	TXD
4	GROUND or RTS	8	RXD



- **COM5 & COM6: Serial Port Connector**

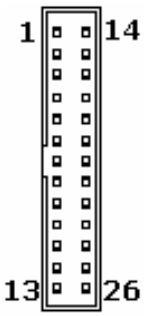
	PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
COM5	1	(DCD)	2	(DSR)
	3	(RXD)	4	(RTS)
	5	(TXD)	6	(CTS)
	7	(DTR)	8	+5V or +12V
	9	GROUND	10	GROUND
COM6	11	(DCD)	12	(DSR)
	13	(RXD)	14	(RTS)
	15	(TXD)	16	(CTS)
	17	(DTR)	18	+5V or +12V
	19	GROUND	20	GROUND



3.3 Parallel Port Connector (LTP1)

- **LPT1: Parallel Port Connector**

LTP1			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT IN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND
13	PRINTER SELECT	26	N/C



3.4 Primary IDE Connector (IDE1)

- **IDE1: Primary IDE Connector**

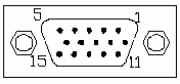
IDE1			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C

21	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	PD66 SELECT
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC	42	VCC
43	GROUND	44	N/C

3.5 VGA Connector (VGA1 & VGA2)

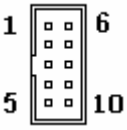
- **VGA1: 15-pin Female Connector**

VGA1			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC / NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		



- **VGA2: 10-pin Box Header Connector**

VGA2			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RED	6	DDCCLK
2	GREEN	7	DDCDAT



3	BLUE	8	GROUND
4	HSYNC	8	GROUND
5	VSYNC	10	GROUND

3.6 CPU & system Fan Connector (J4 & J5)

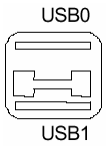
- **J4: CPU Fan Connector**
- **J5: system Fan Connector**

J4 & J5	
PIN NO.	**DESCRIPTION**
1	Rotation Signal
2	+12V
3	Ground

3.7 USB Connector (USB1 & USB2)

- **USB1 & USB2: 2 ports USB Connectors**

USB1 & USB2			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	USB Power	5	USB Power
2	DATA4-	6	DATA5-
3	DATA4+	7	DATA5+
4	GROUND	8	GROUND



3.8 LVDS Connector (LVDS1 & LVDS2)

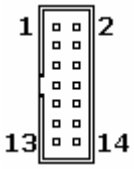
- **LVDS1 & LVDS2: LVDS Connectors**

LVDS1 & LVDS2			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GROUND	2	GROUND
3	CH1 DATA3+	4	CH1 DATA3-
5	CH1 CLK+	6	CH1 CLK-
7	CH1 DATA2+	8	CH1 DATA2-
9	CH1 DATA1+	10	CH1 DATA1-
11	CH1 DATA0+	12	CH1 DATA0-
13	GROUND	14	GROUND
15	CH2 DATA3+	4	CH2 DATA3-
17	CH2 CLK+	6	CH2 CLK-
19	CH2 DATA2+	8	CH2 DATA2-
21	CH2 DATA1+	10	CH2 DATA1-
23	CH2 DATA0+	12	CH2 DATA0-
25	GROUND	26	GROUND
27	LCD power	28	LCD power
29	LCD power	30	LCD power

3.9 Box Header Connector (CN7)

- **CN7: COM3 & USB Box Header Connector**

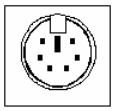
CN7			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC	2	VCC
3	USB1-	4	USB0-
5	USB1+	6	USB0+
7	GND	8	GND
9	DTR	10	CTS
11	RTS	12	TXD
13	RXD	14	DSR



3.10 Keyboard/Mouse Connector (KB_MS1 & CN10)

- **KB_MS1: Mini DIN Keyboard/Mouse Connector**

KB_MS1	
PIN NO.	**DESCRIPTION**
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK



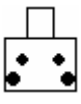
- **CN10: 6-pin Keyboard Connector**

CN10	
PIN NO.	**DESCRIPTION**
1	+5V
2	KEYBOARD CLOCK
3	PC KB CLOCK
4	KEYBOARD DATA
5	PC KB DATA
6	GROUND
Note: Default short pin 2-3, 4-5	

3.11 Power Button (PS_ON1)

- **PS_ON1: Power Button**

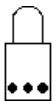
PS_ON1			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GROUND	2	PS_ON
3	GROUND	4	GROUND



3.12 Power LED (LED1)

- **LED1: Power LED**

LED1			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	GROUND
3	+5V Standby		



3.13 Power SW/LED Connector (CN4)

- **CN4: Power SW/ LED Connector**

CN4	
PIN NO.	DESCRIPTION
1	LED ON +
2	LED OFF +
3	GROUND
4	PS ON

3.14 Digital I/O with RJ-11 Connector (CN2)

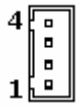
- **CN2: Digital I/O with RJ-11 Connector**

CN2			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	DGI/O OUT 0
3	DGI/O IN 0	4	+12V
5	DGI/O OUT 1	6	GROUND

3.15 Power Connector (CN5 & CN8)

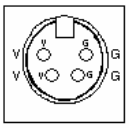
- **CN5: Power 4P Connector**

CN5	
PIN NO.	DESCRIPTION
1	+5V
2	GROUND
3	GROUND
4	+12V



- **CN8: 12V DC Power Connector**

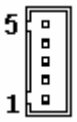
CN8			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GROUND
3	+12V	4	GROUND



3.16 LCD Back Light Connector (CN6 & CN9)

- CN6 / CN9: LCD Back Light Connector
  CN6 for LVDS1, CN9 for LVDS2

CN6 & CN9	
PIN NO.	DESCRIPTION
1	+12V
2	+12V
3	GROUND
4	GROUND
5	LCD_BKLEN



3.17 Audio Connector

3.17.1 Speaker Out Phone Jack Connector (J6)

- **J6: Speaker Out Phone Jack Connector**

J6			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	NC	2	GROUND
3	Line Out (Left)	4	Speaker Out (Right)

3.17.2 MIC In Phone Jack Connector (J7)

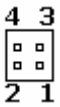
- **J7: MIC In Phone Jack Connector**

J7			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	NC	2	GROUND
3	MIC In	4	NC

3.17.3 Speaker Out Pin Header Connector (CN3)

- **CN3: Speaker Out Pin Header Connector**

CN3			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	SPK Out (Left)	2	GROUND
3	SPK Out (Right)	4	GROUND



Chapter4 BIOS Setup

4.1 Setup Menu

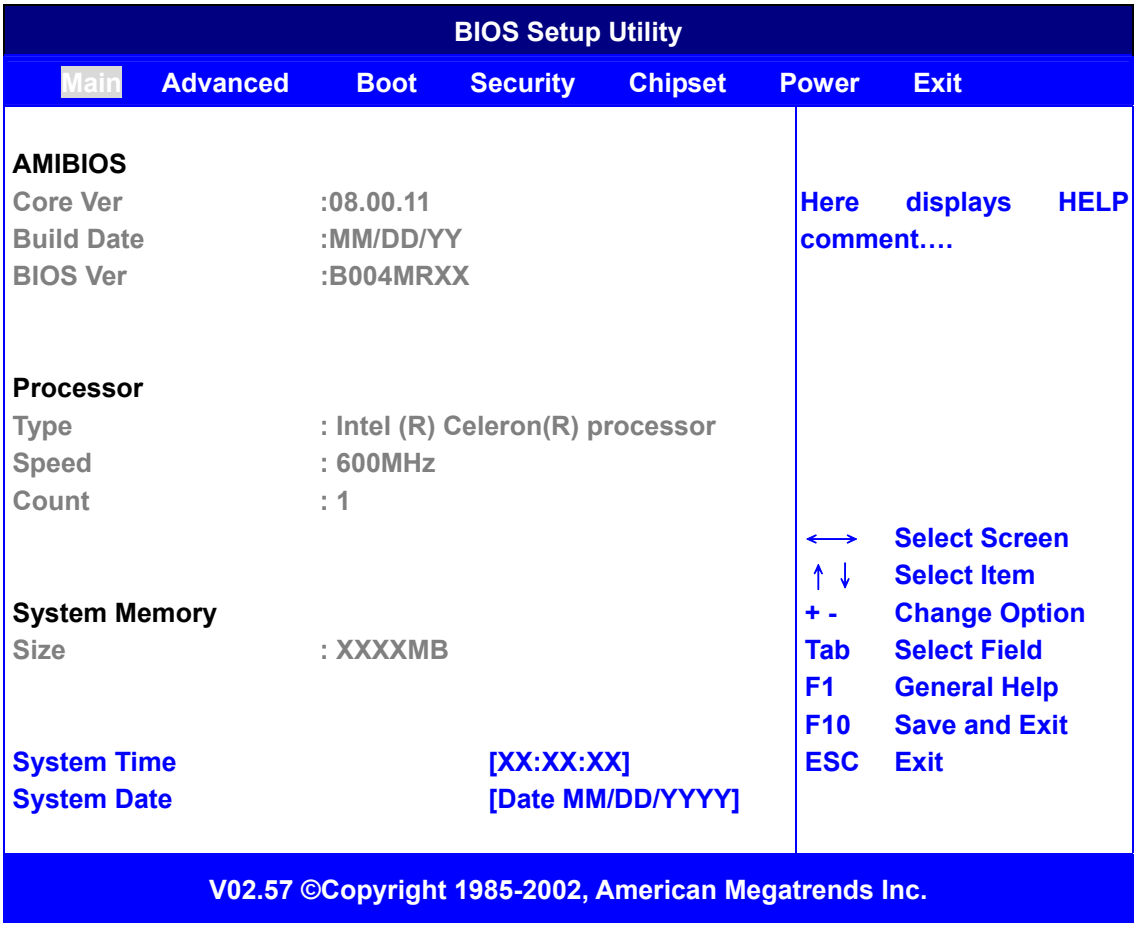
The BIOS (Basic Input and Output System) Setup utility is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. BIOS is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

Configure such items as:
Hard drives, diskette drives, and peripherals
Password protection from unauthorized use
Power Management Features

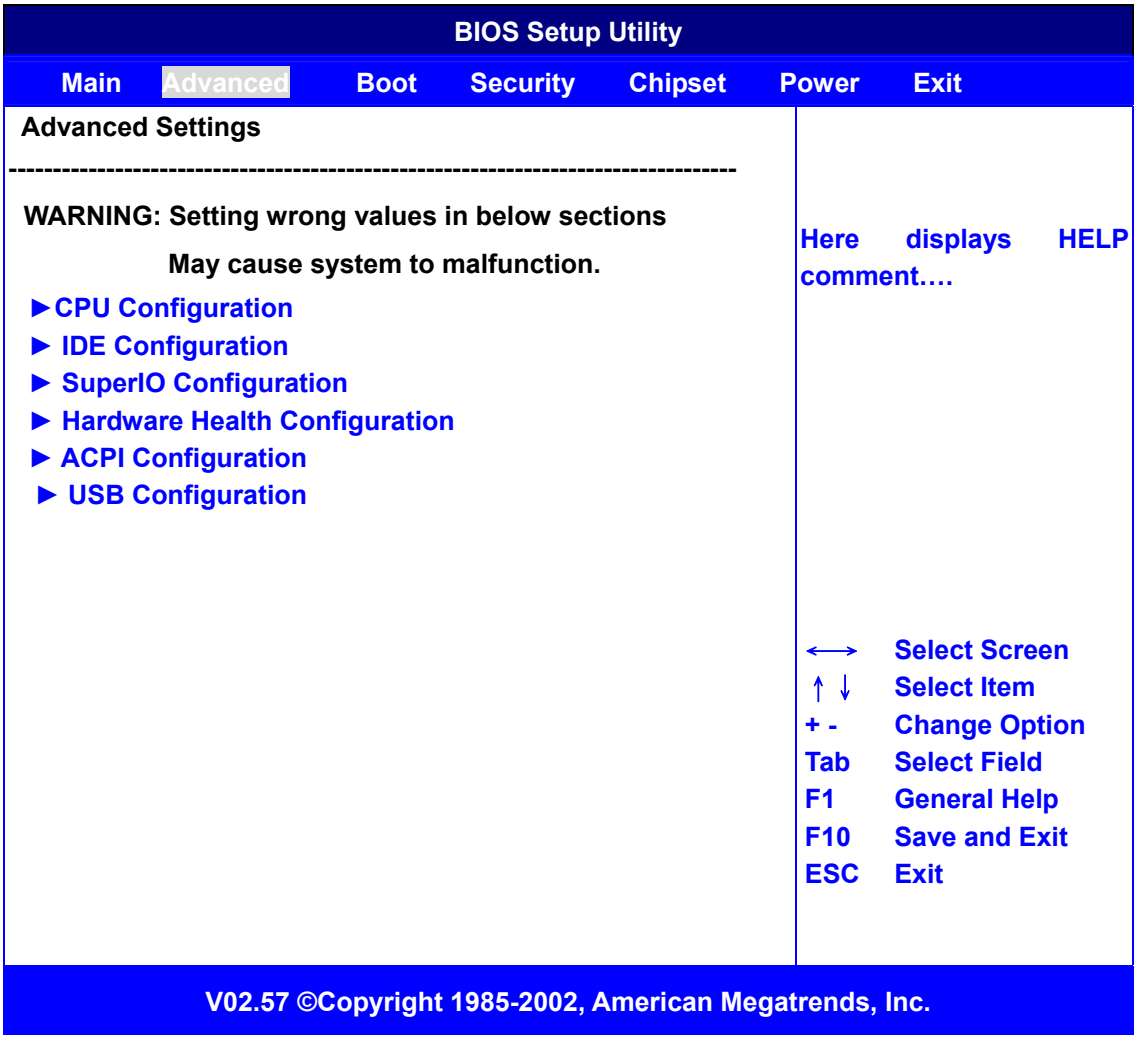
This Setup utility should be executed under the following conditions:
When changing the system configuration
When a configuration error is detected by the system and you are prompted to make changes to the Setup utility

When redefining the communication ports to prevent any conflicts
When making changes to the Power Management configuration
When changing the password or making other changes to the security setup
BIOS Setup Options at Boot
The user will be able to initiate SETUP by pressing the respective key.
Press Delete to run Setup

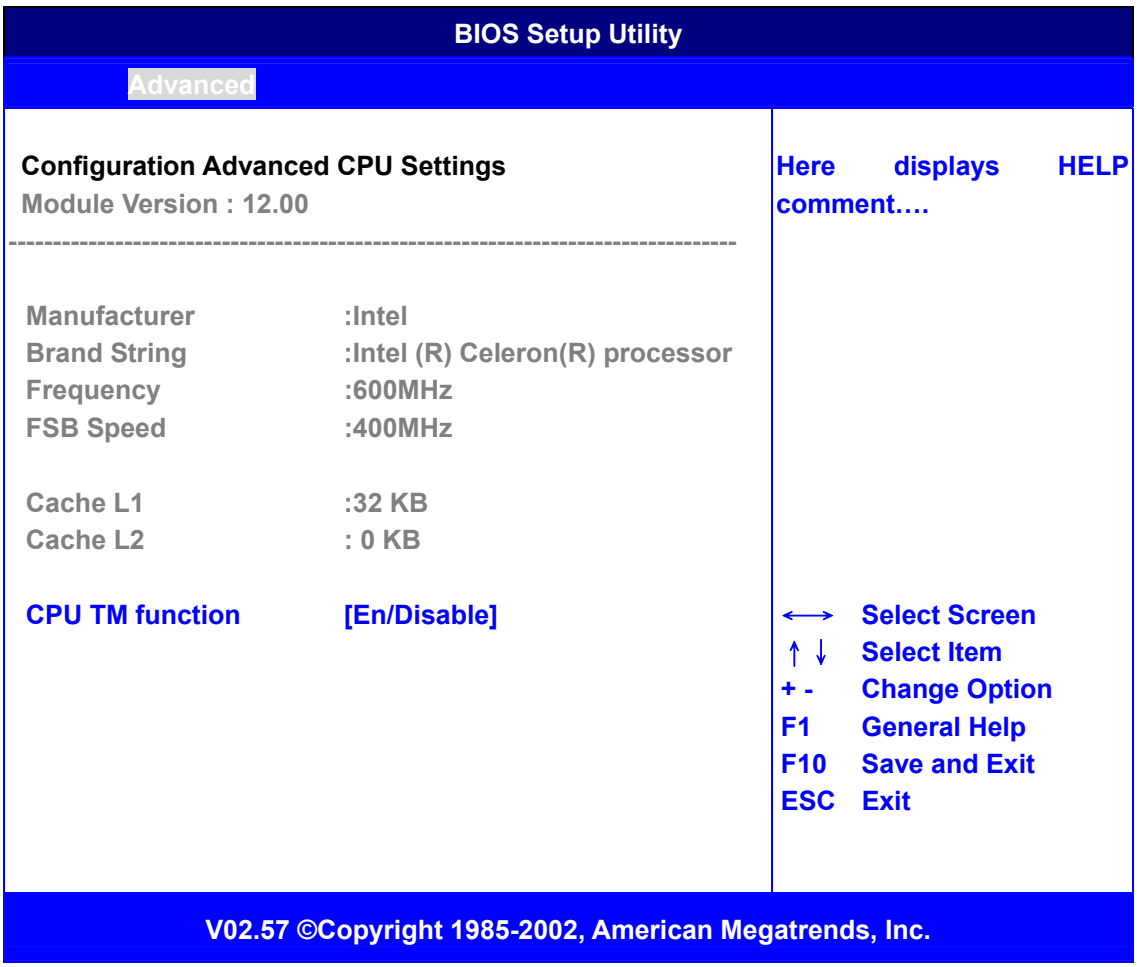
4.2 Setup Submenu: Main



4.3 Setup Submenu: Advanced



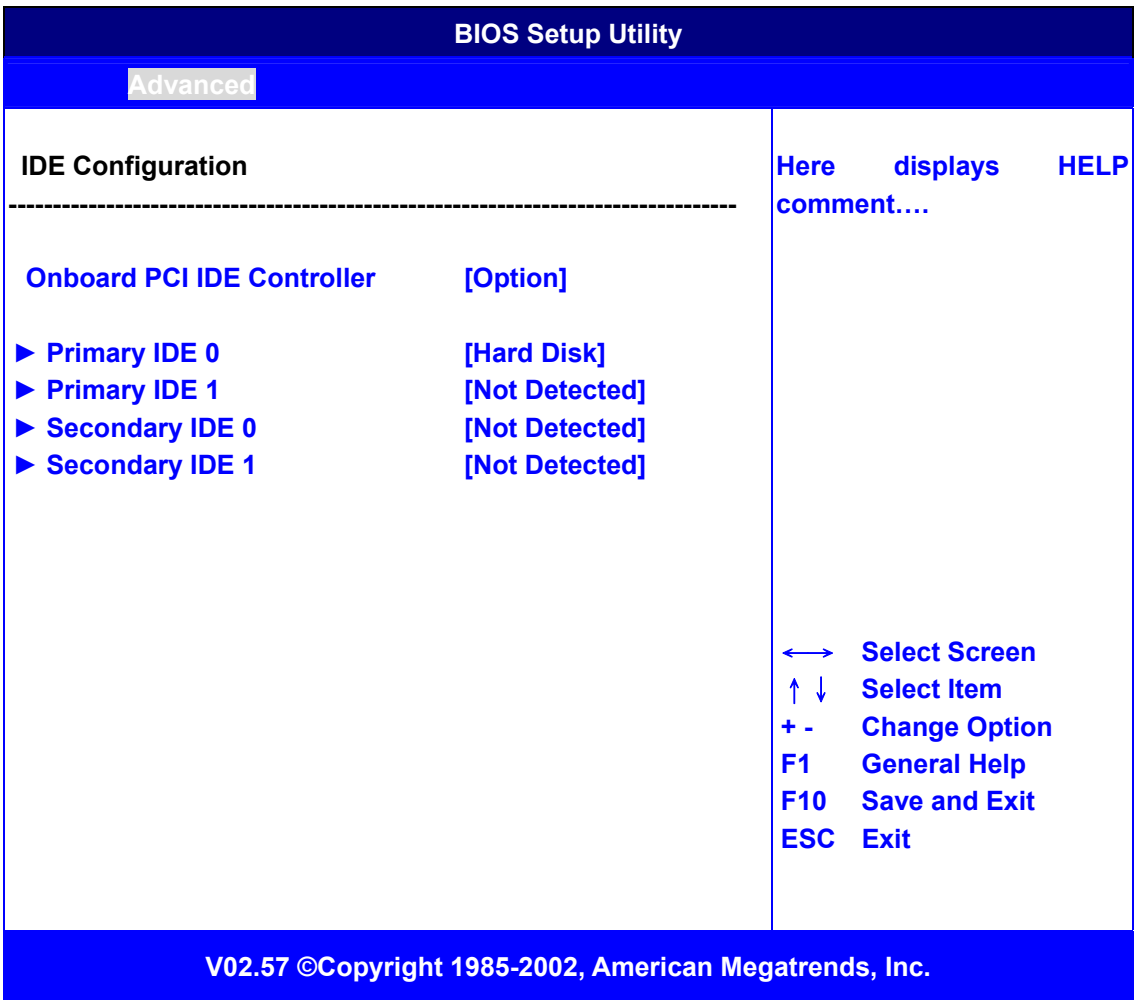
4.3.1 CPU Configuration



- **Options summary**

CPU TM function	Disabled	Optimal Default, Failsafe Default
	Enable	
This item en/disables TM (thermal management) function of CPU		

4.3.2 IDE Configuration (Compatible Mode)


BIOS Setup Utility
Advanced
IDE Configuration
Here displays HELP comment….
Onboard PCI IDE Controller [Option]
► Primary IDE 0 [Hard Disk]
► Primary IDE 1 [Not Detected]
► Secondary IDE 0 [Not Detected]
► Secondary IDE 1 [Not Detected]
←→ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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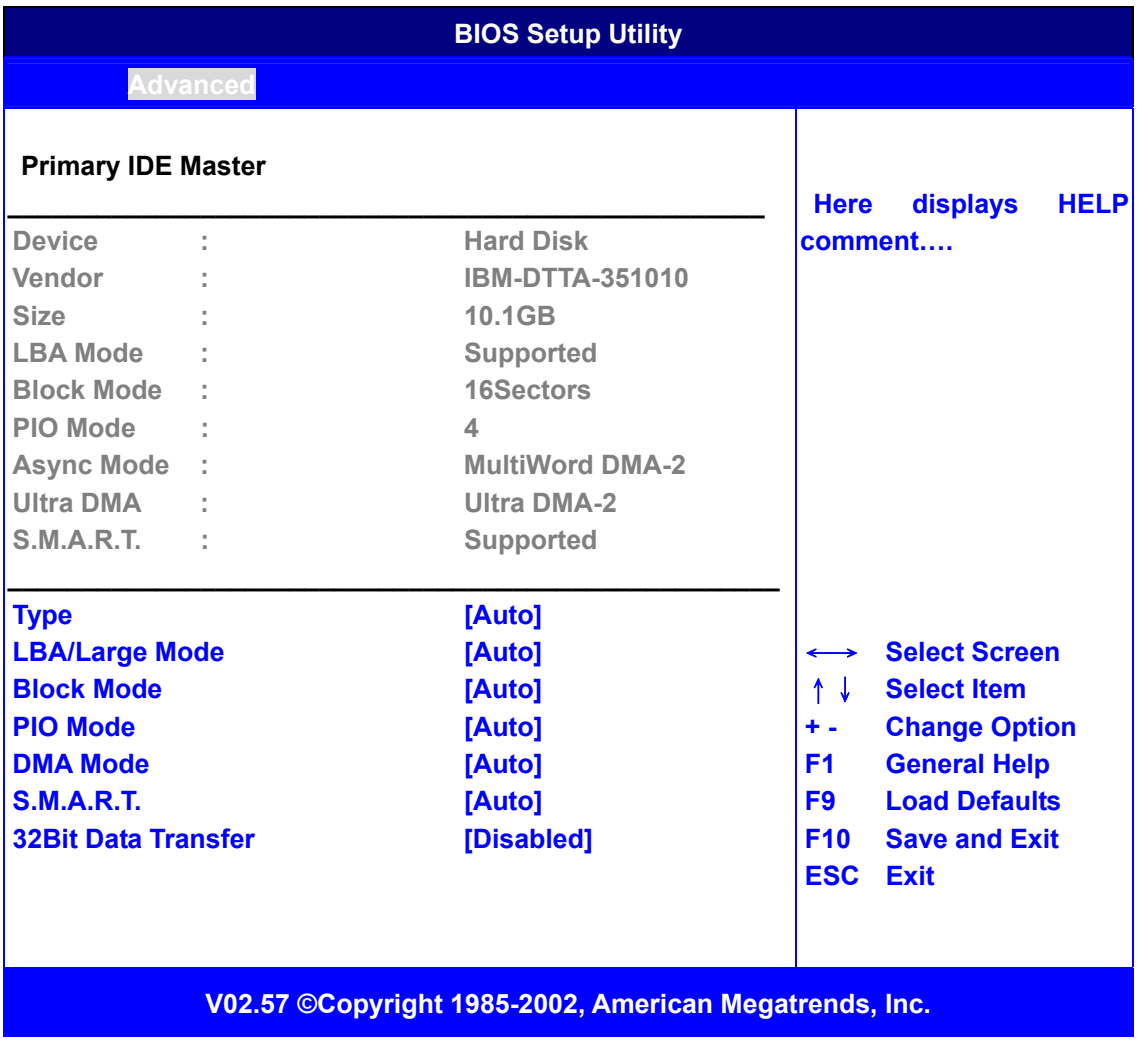
- **Options summary**

Onboard PCI IDE Controller	Disabled	Optimal Default, Failsafe Default
	Primary	
Select how PCI IDE Controller works. Disabled: No device Primary: Enables primary IDE controller.		

4.3.2.1 Primary IDE Master (if attached Hard Disk)

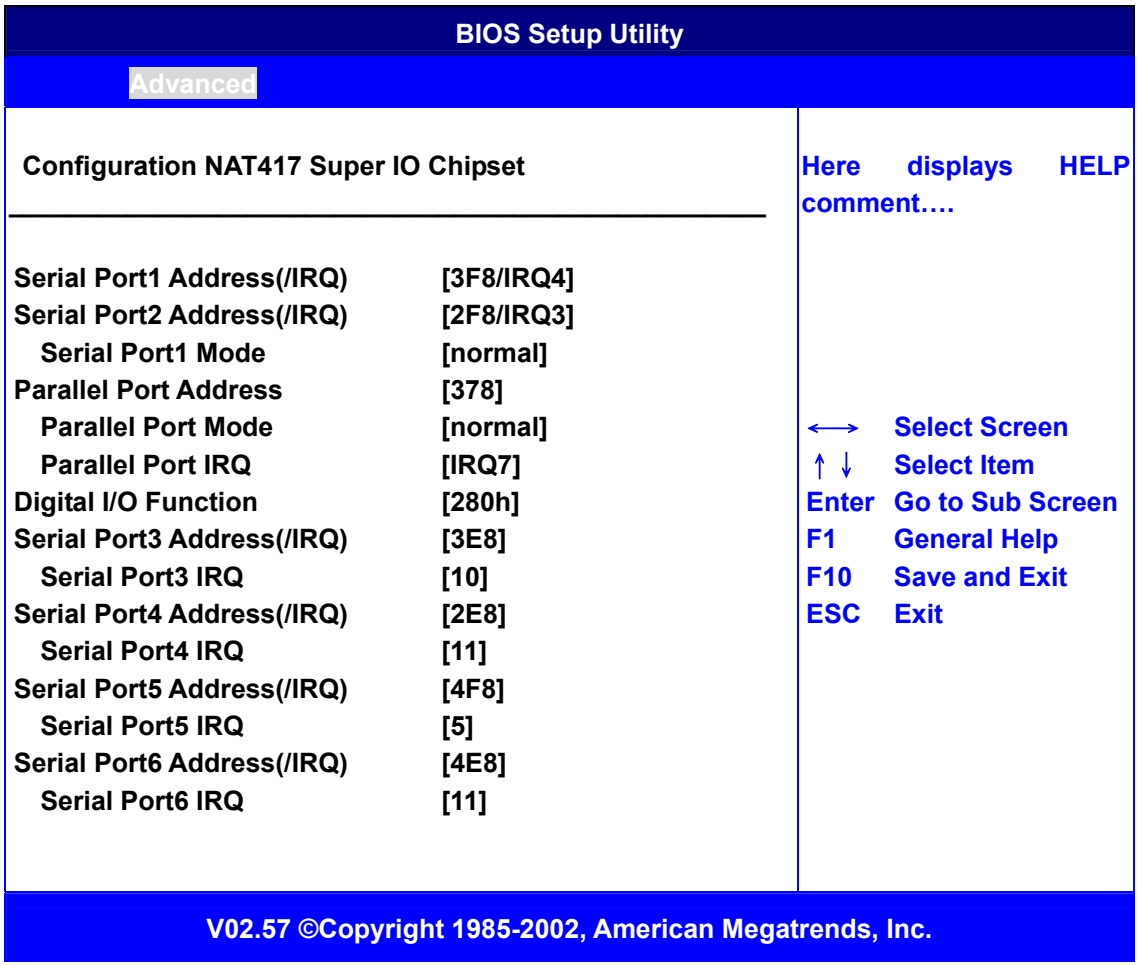


- **Options summary**

Type	Not Installed	Optimal Default, Failsafe Default
	Auto	
	CDROM	
	ARMD	
Select the type corresponding to the device present. Not Installed: No device Auto: Auto detected CDROM: ATAPI CDROM ARMD: ATAPI Removable Media Device		
LBA/Large Mode	Disabled	Optimal Default, Failsafe Default
	Auto	

Disabled: Disables LBA Mode. Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.		
Block (Multi-Sector Transfer)	Disabled	
	Auto	Optimal Default, Failsafe Default
Disabled: The Data transfer from and to the device occurs one sector at a time. Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it.		
PIO Mode	Auto	Optimal Default, Failsafe Default
	0	
	1	
	2	
	3	
	4	
DMA Mode	Auto	Optimal Default, Failsafe Default
	SWDMA0	
	SWDMA1	
	SWDMA2	
	MWDMA0	
	MWDMA1	
	MWDMA2	
	UDMA0	
	UDMA1	
	UDMA3	
	UDMA4	
Select DMA Mode. Auto: Auto detected SWDMA n: Single Word DMA n MWDMA n: Multiword DMA n UDMA n: Ultra DMA n		
S.M.A.R.T.	Auto	Optimal Default, Failsafe Default
	Disabled	
	Enabled	
S.M.A.R.T. stands for “Self-Monitoring, Analysis and Reporting Technology”.		
32Bit Data Transfer	Disabled	Failsafe Default
	Enabled	Optimal Default

4.3.3 Super IO Configuration



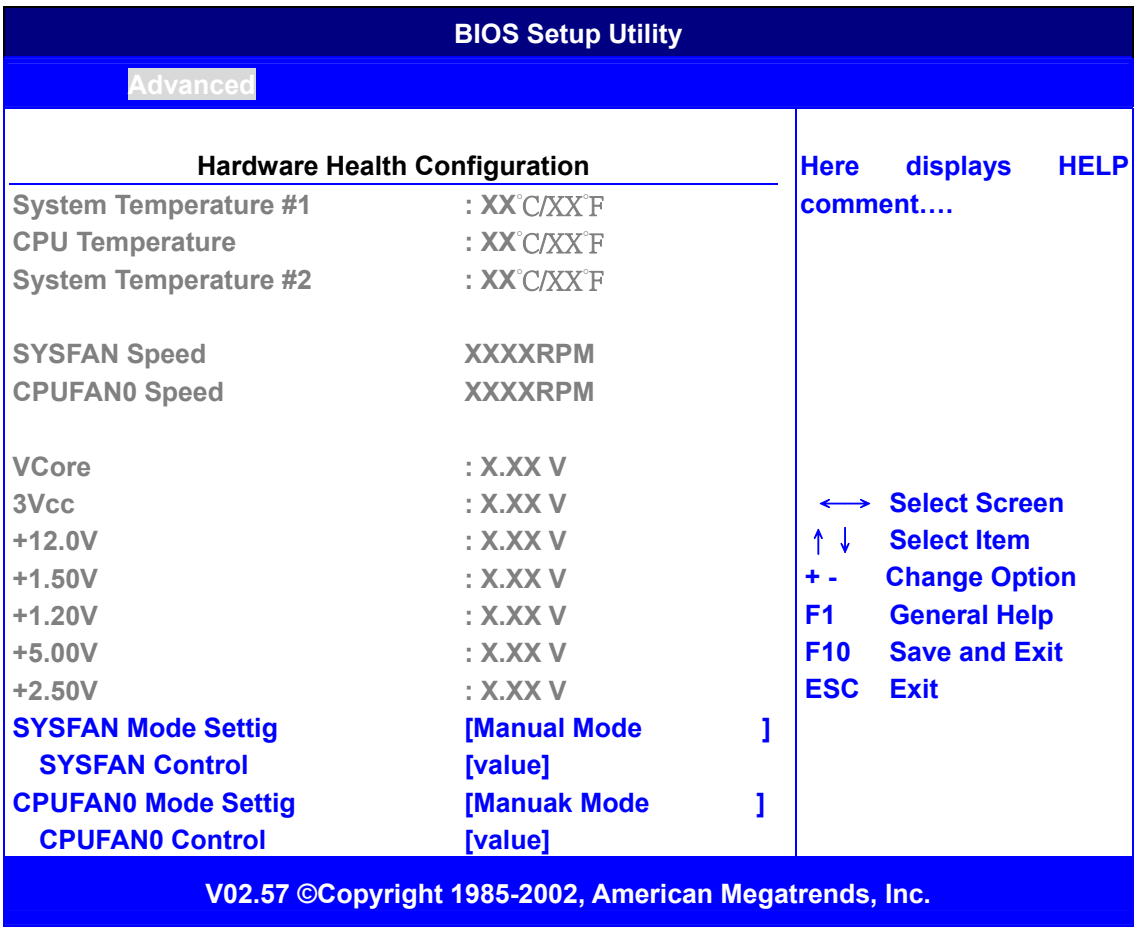
- **Options summary**

Serial Port1 Address (/IRQ)	Disabled	Optimal Default, Failsafe Default
	3F8/IRQ4	
	3E8/IRQ4	
	2E8/IRQ3	
This item selects Serial Port1 Base Addresses.		
Serial Port2 Address (/IRQ)	Disabled	Optimal Default, Failsafe Default
	2F8/IRQ3	
	3E8/IRQ4	
	2E8/IRQ3	
This item selects Serial Port2 Base Addresses.		
	Normal	Optimal Default, Failsafe Default
	IrDA	

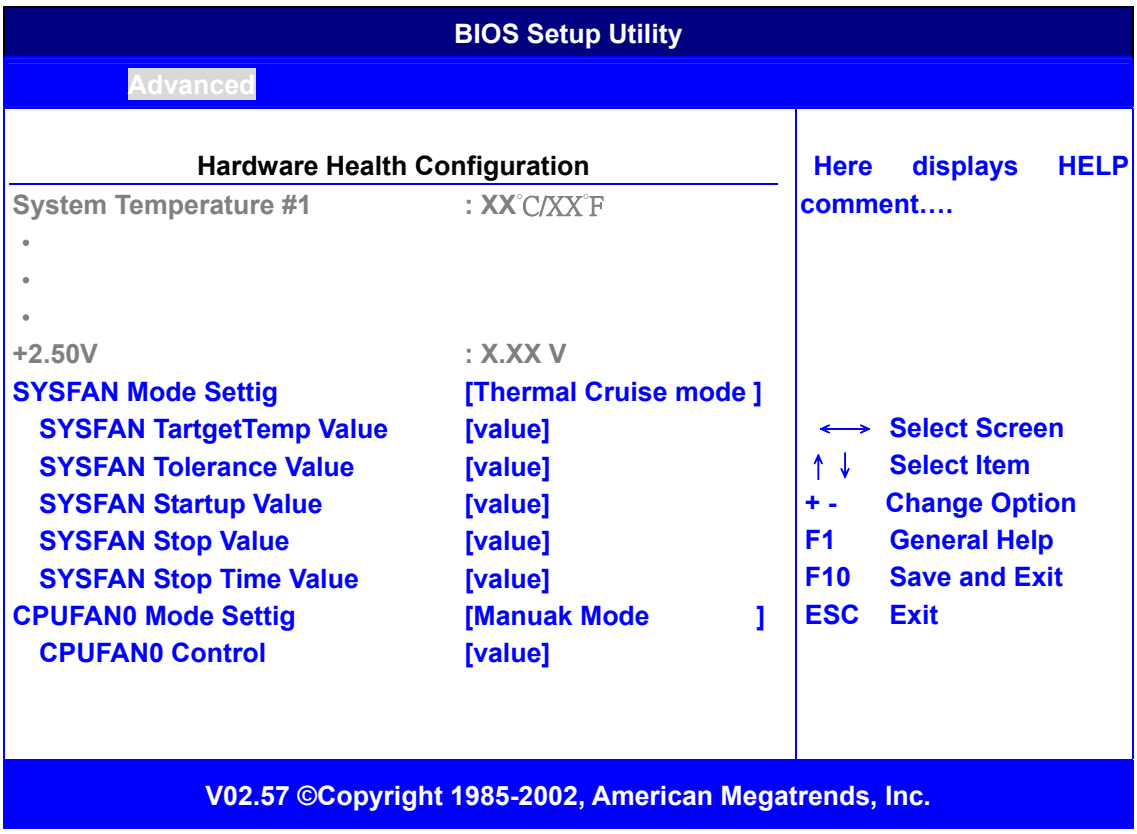
	Ask IR	
This Item selects mode for Serial Port1.		
Parallel Port Address	Disabled	Failsafe Default
	378	Optimal Default
	278	
	3BC	
This item selects Parallel Port Base Addresses. Mode setting and IRQ setting below will not appear if disabled		
Parallel port Mode	Normal	Optimal Default, Failsafe Default
	Bi-Directional	
	EPP	
	ECP	
	EPP+ECP	
This Item selects mode for Parallel Port.		
Parallel port IRQ	IRQ5	
	IRQ7	Optimal Default, Failsafe Default
This item selects IRQ for Parallel Port.		
Digital I/O Function	200h	
	220h	
	240h	
	260h	
	280h	Optimal Default, Failsafe Default
This item selects base address of SIO digital I/O function.		
Serial Port3 Address	Disabled	
	3E8	Optimal Default, Failsafe Default
	2E8	
	4F8	
	4E8	
This item selects Serial Port3 Base Addresses.		
Serial Port3 IRQ	5	
	10	
	11	Optimal Default, Failsafe Default
This item selects IRQ for Serial Port3.		
Serial Port4 Address	Disabled	
	3E8	
	2E8	Optimal Default, Failsafe Default
	4F8	

	4E8	
This item selects Serial Port4 Base Addresses.		
Serial Port4 IRQ	5	
	10	
	11	Optimal Default, Failsafe Default
This item selects IRQ for Serial Port4.		
Serial Port5 Address	Disabled	
	3E8	
	2E8	
	4F8	Optimal Default, Failsafe Default
	4E8	
This item selects Serial Port5 Base Addresses.		
Serial Port5 IRQ	5	Optimal Default, Failsafe Default
	10	
	11	
This item selects IRQ for Serial Port5.		
Serial Port6 Address	Disabled	
	3E8	
	2E8	
	4F8	
	4E8	Optimal Default, Failsafe Default
This item selects Serial Port6 Base Addresses.		
Serial Port6 IRQ	5	
	10	
	11	Optimal Default, Failsafe Default
This item selects IRQ for Serial Port6.		

4.3.4 Hardware Health Configuration (Manual Mode)



4.3.4.1 Hardware Health Configuration (Thermal Cruise Mode)


BIOS Setup Utility
Advanced
Hardware Health Configuration
System Temperature #1 : XX°C/XX°F
+2.50V : X.XX V
SYSFAN Mode Settig [Thermal Cruise mode]
SYSFAN TartgetTemp Value [value]
SYSFAN Tolerance Value [value]
SYSFAN Startup Value [value]
SYSFAN Stop Value [value]
SYSFAN Stop Time Value [value]
CPUFAN0 Mode Settig [Manuak Mode]
CPUFAN0 Control [value]
Here displays HELP comment….
↔ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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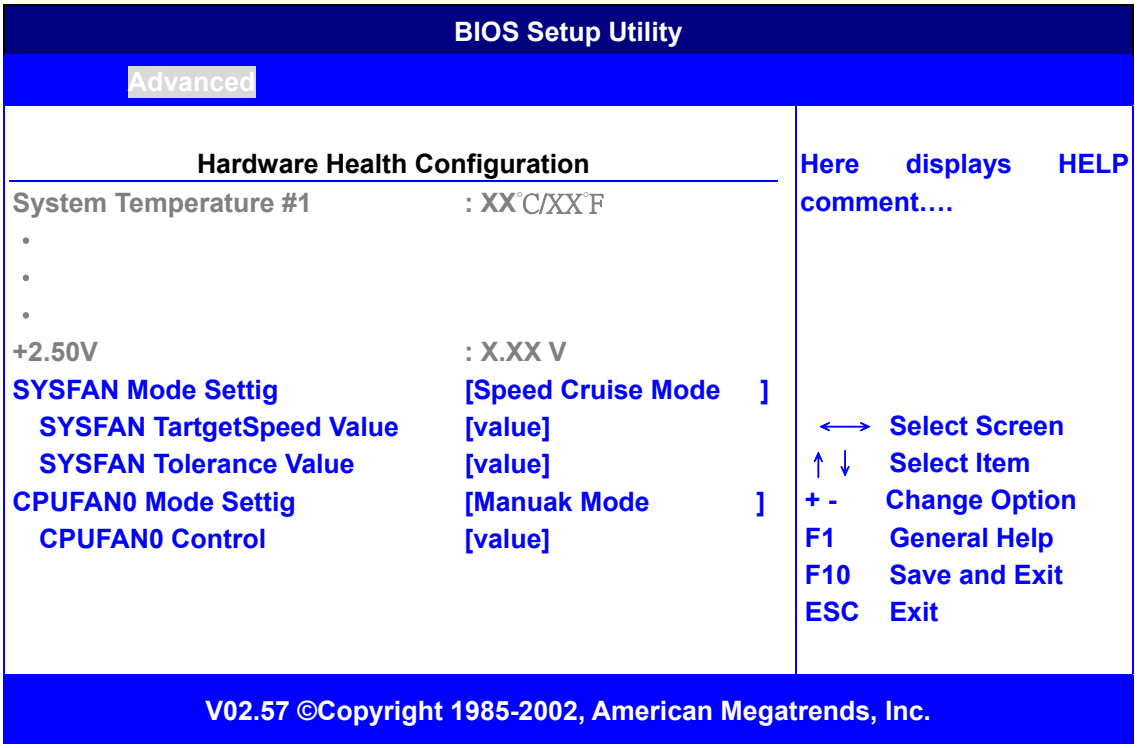
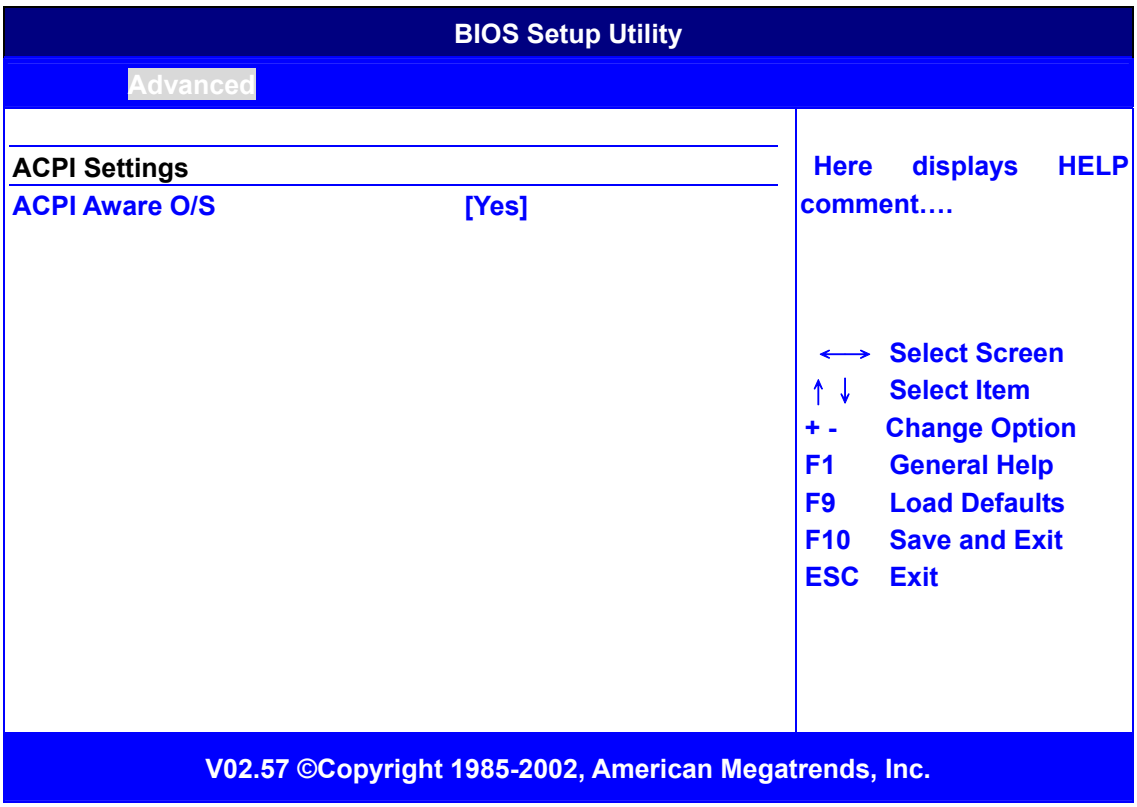
4.3.4.2 Hardware Health Configuration (Speed Cruise Mode)



- **Options summary**

SYSFAN Mode Setting **CPUFAN0 Mode Setting**	Manual Mode	Optimal Default, Failsafe Default
	Thermal Cruise Mode	
	Speed Cruise Mode	
These item selects FAN configuration mode: Manual Mode: Controls FAN by manual. Thermal Cruise Mode: Temperature targeting mode. Speed Cruise Mode: FAN speed targeting mode.		
● **Manual Mode**		
FAN CONTROL	250	Optimal Default, Failsafe Default
This item controls DC voltage of FAN. Max =255		
● **Thermal Cruise Mode**		
SYSFAN TargetTemp value	055	Optimal Default, Failsafe Default
This item determines target temperature. Max =255		
SYSFAN Tolerance value	03	Optimal Default, Failsafe Default
This item determines tolerance of target temperature. Max =15		
SYSFAN StartUp value	096	Optimal Default, Failsafe Default
This item determines Fan start up value. Max =255		
SYSFAN Stop value	064	Optimal Default, Failsafe Default
This item determines FAN stop value. Max =255		
SYSFAN Stop Time value	060	Optimal Default, Failsafe Default
This item determines FAN stop time value. Max =255		
● **Speed Cruise Mode**		
SYSFAN TargetTemp value	055	Optimal Default, Failsafe Default
This item determines target FAN speed. Max =255		
SYSFAN Tolerance value	03	Optimal Default, Failsafe Default
This item determines tolerance of target speed. Max =15		

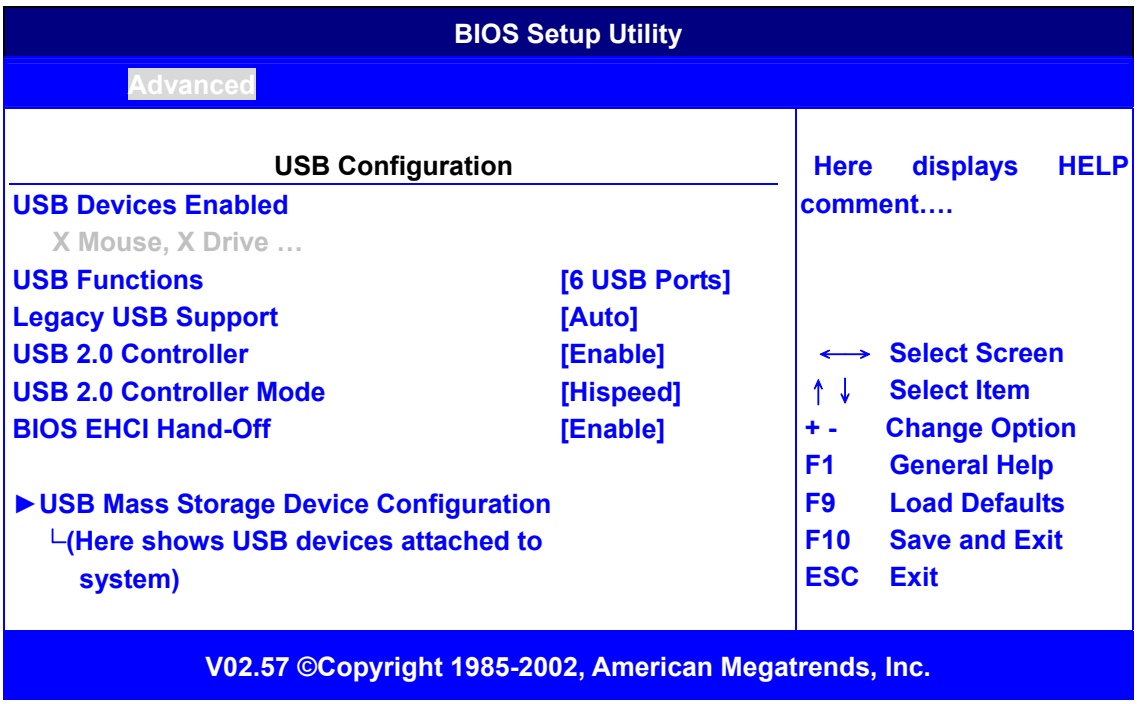
4.3.5 ACPI Configuration



- **Options summary**

ACPI Aware O/S	No	Optimal Default, Failsafe Default
	Yes	
This item En/Disables ACPI to fit supportability of Operation System.		

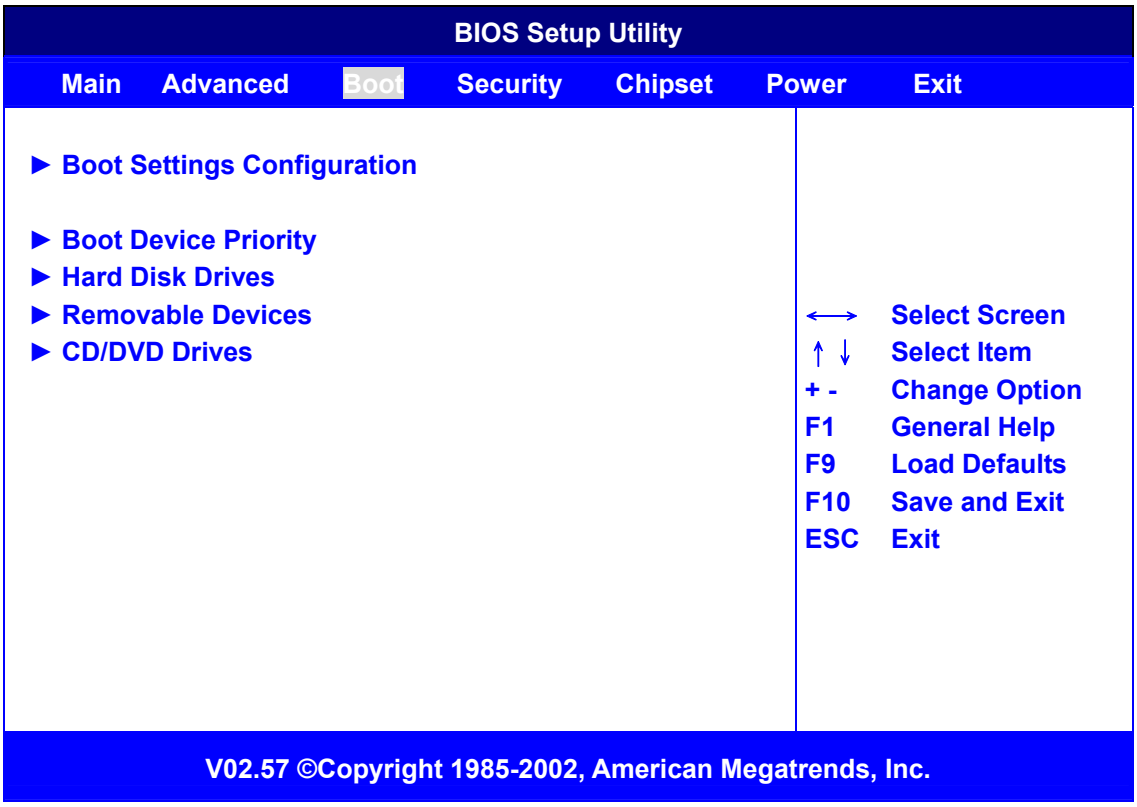
4.3.6 USB Configuration



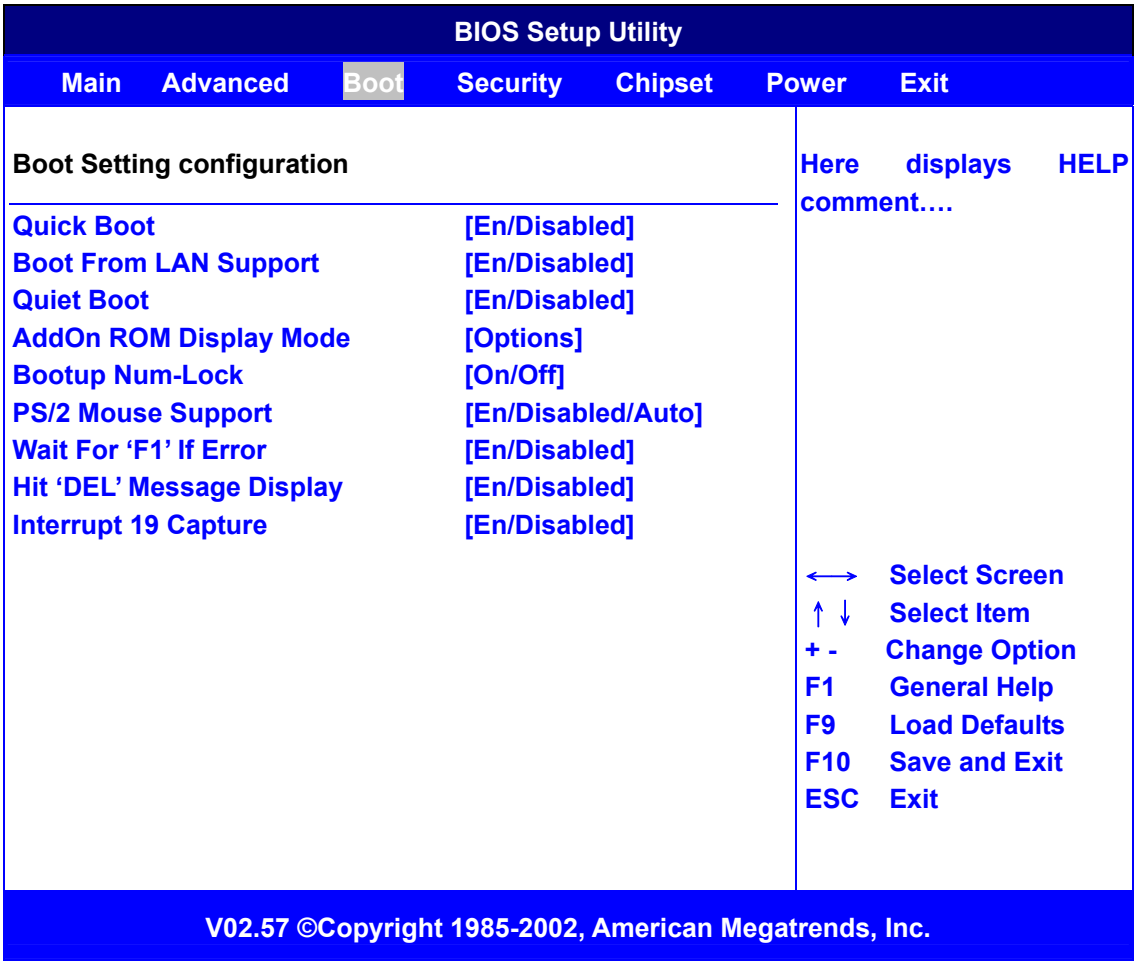
- **Options summary**

USB Functions	Disable	
	2 USB Ports	
	4 USB Ports	
	6 USB Ports	Optimal Default, Failsafe Default
This item selects USB ports for use.		
USB 2.0 Controller	Enable	
	Disable	Optimal Default, Failsafe Default
This item selects that supporting USB 2.0 or not.		
Legacy USB Support	Disable	
	Enable	
	Auto	Optimal Default, Failsafe Default
This item selects that supporting Legacy USB or not.		
USB 2.0 Controller Mode	FullSpeed	
	HiSpeed	Optimal Default, Failsafe Default
This item configures the mode of USB 2.0 controller. It won't appear if USB2.0 controller is disabled.		
BIOS EHCI Hand-Off	Disable	
	Enable	Optimal Default, Failsafe Default
This item en/disables BIOS EHCI hand-off.		

4.4 Setup submenu: Boot



4.4.1 Boot Settings Configuration


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
Boot Setting configuration
Here displays HELP comment….
Quick Boot [En/Disabled]
Boot From LAN Support [En/Disabled]
Quiet Boot [En/Disabled]
AddOn ROM Display Mode [Options]
Bootup Num-Lock [On/Off]
PS/2 Mouse Support [En/Disabled/Auto]
Wait For 'F1' If Error [En/Disabled]
Hit 'DEL' Message Display [En/Disabled]
Interrupt 19 Capture [En/Disabled]
←→ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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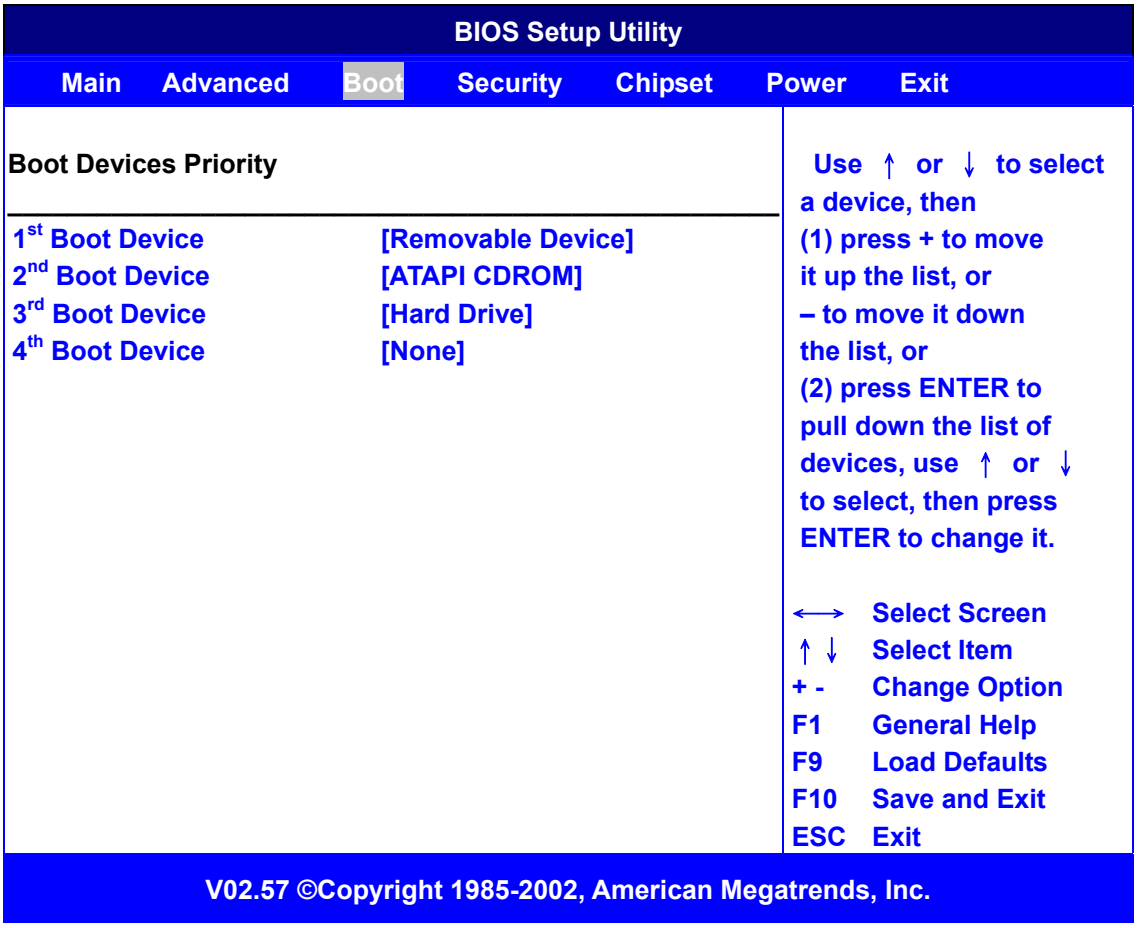
- **Options summary**

Quick Boot	Disable	
	Enable	Optimal Default, Failsafe Default
If you enable this item, the system eliminates some of the power on test routines so that the start-up time is quicker.		
Boot From LAN Support	Disable	Optimal Default, Failsafe Default
	Enable	
This item en/disables boot from LAN function.		
Quiet Boot	Disable	Optimal Default, Failsafe Default
	Enable	
This item determines the appearance of the system at start-up time. If the value is set to "Disabled," the results of the POST (Power On Self Test) are displayed. If the value is set to "Enabled," a Logo screen is displayed.		

AddOn ROM Display Mode	Force BIOS	Optimal Default, Failsafe Default
	Keep Current	
This item determines whether Add-on ROMs be displayed when Quiet Boot is enabled. Force BIOS: Forces to display add-on ROM. Keep Current: Keeps Quiet Boot.		
Bootup Num-Lock	Off	
	On	Optimal Default, Failsafe Default
If you enable this item, the Num Lock key is activated each time the system is started.		
PS/2 Mouse Support	Disable	
	Enable	
	Auto	Optimal Default, Failsafe Default
This item en/disables PS/2 mouse.		
Wait For 'F1' If Error	Disable	
	Enable	Optimal Default, Failsafe Default
This item en/disables the message.		
Hit 'DEL' Message Display	Disable	
	Enable	Optimal Default, Failsafe Default
This item en/disables the message.		
Interrupt 19 Capture	Disable	
	Enable	Optimal Default, Failsafe Default
This item allows option ROMs to trap int 19.		

4.4.2 Boot Device Priority


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
Boot Devices Priority
1st Boot Device [Removable Device]
2nd Boot Device [ATAPI CDROM]
3rd Boot Device [Hard Drive]
4th Boot Device [None]
Use ↑ or ↓ to select a device, then (1) press + to move it up the list, or – to move it down the list, or (2) press ENTER to pull down the list of devices, use ↑ or ↓ to select, then press ENTER to change it.
↔ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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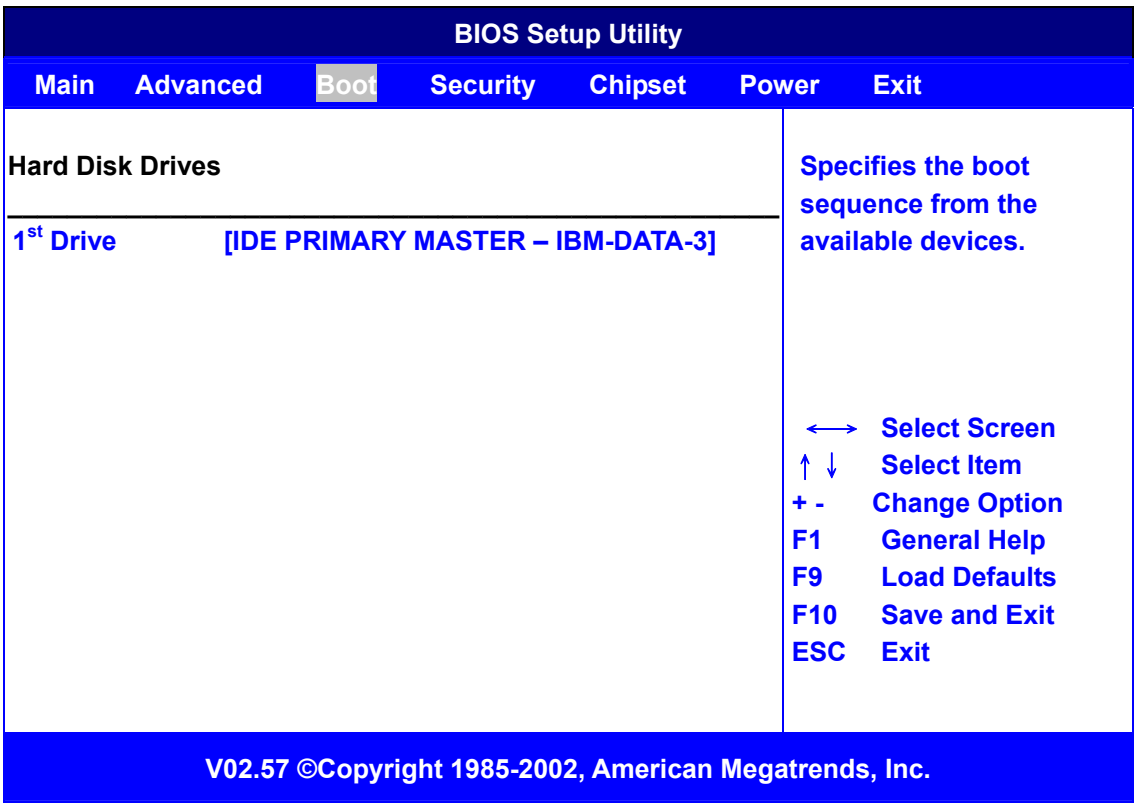
4.4.3 Hard Disk Drives


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
Hard Disk Drives
1st Drive [IDE PRIMARY MASTER – IBM-DATA-3]
Specifies the boot sequence from the available devices.
↔ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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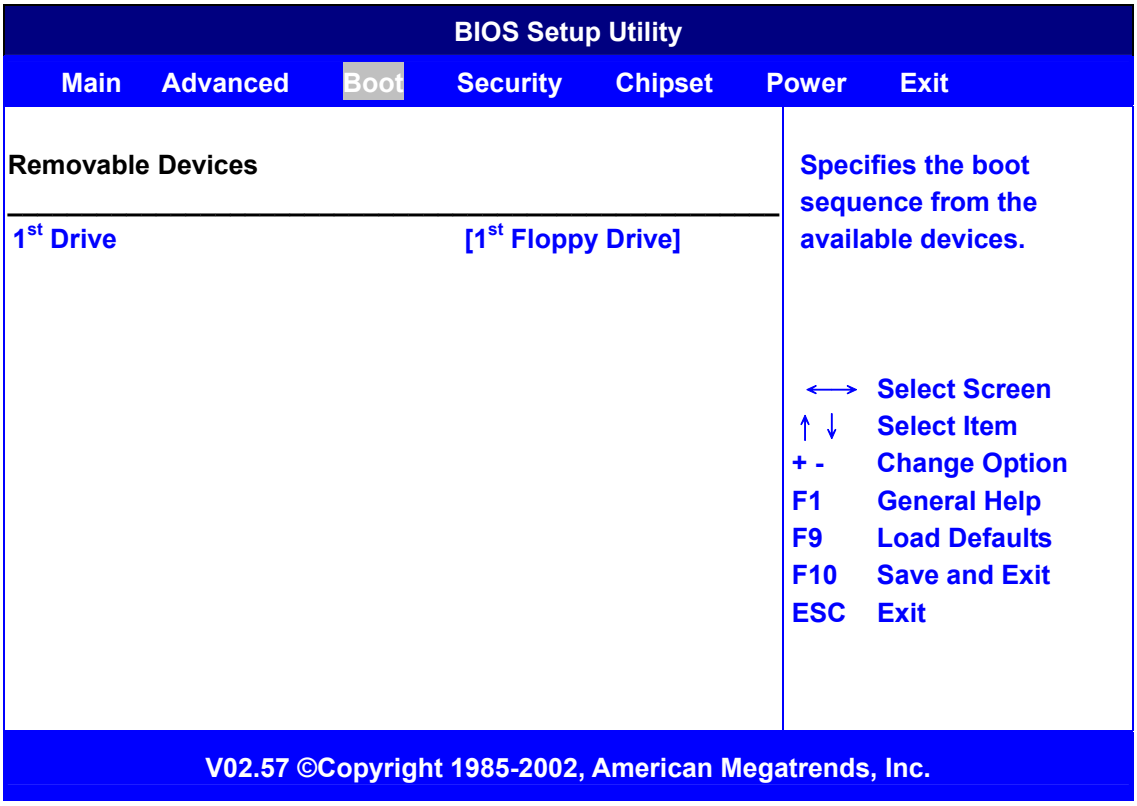
4.4.4 Removable Devices


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
Removable Devices
1st Drive [1st Floppy Drive]
Specifies the boot sequence from the available devices.
↔ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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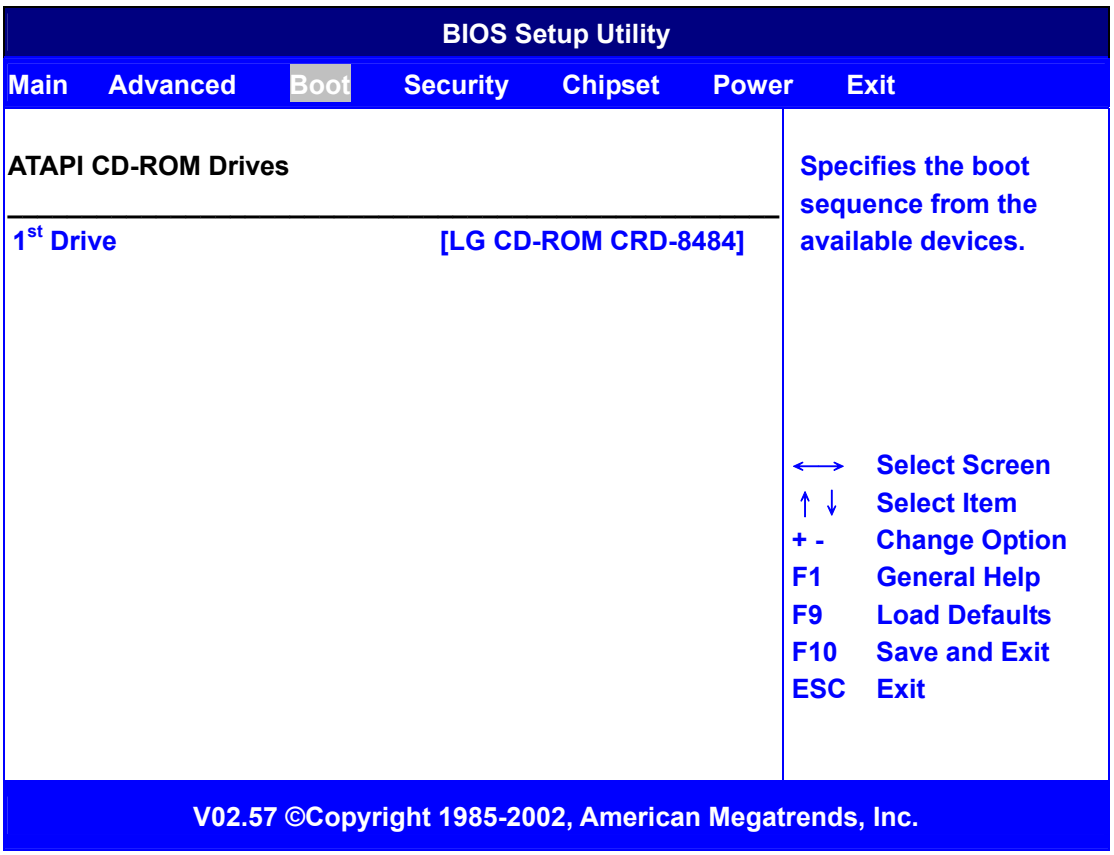
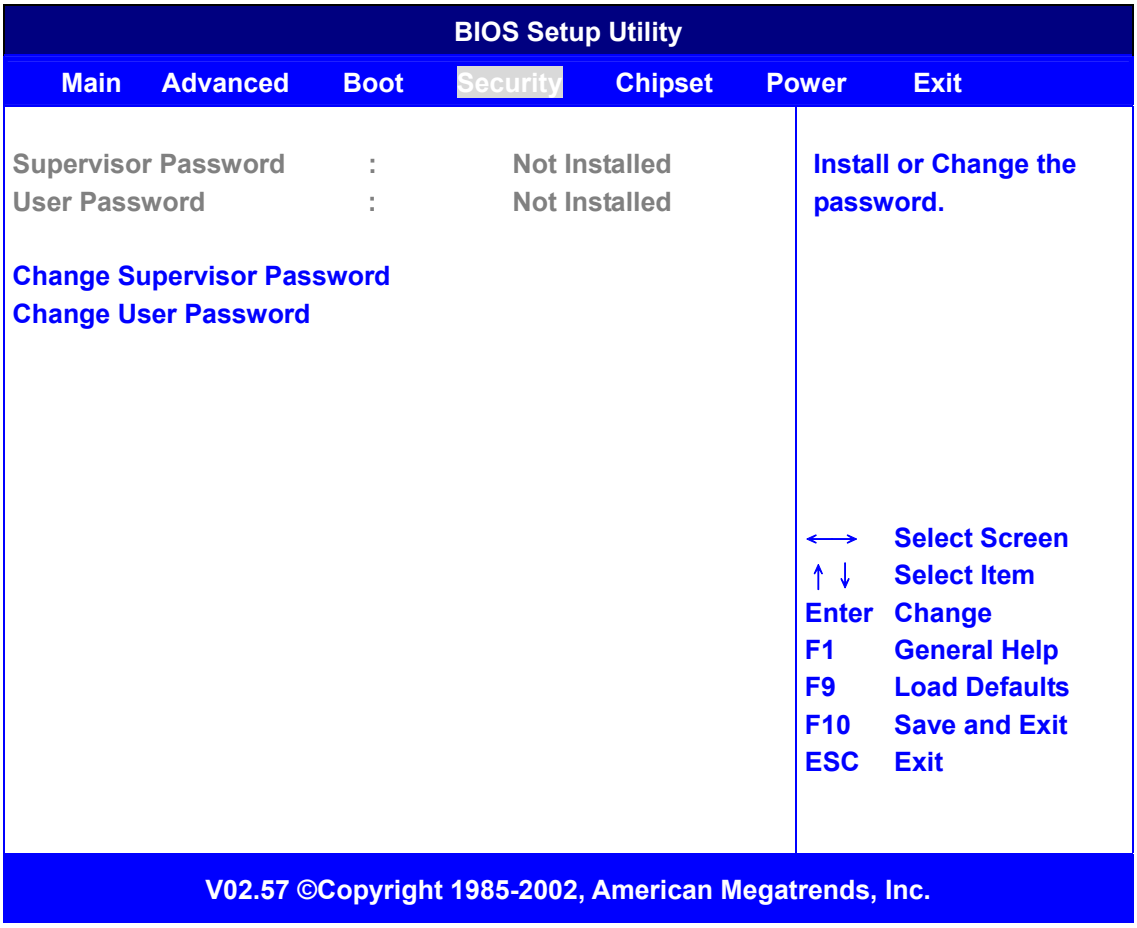
4.4.5 CD / DVD Drives


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
ATAPI CD-ROM Drives
1st Drive [LG CD-ROM CRD-8484]
Specifies the boot sequence from the available devices.
←→ Select Screen
↑ ↓ Select Item
+ - Change Option
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
V02.57 ©Copyright 1985-2002, American Megatrends, Inc.

4.5 Setup submenu: Security



- **Change User/Supervisor Password**

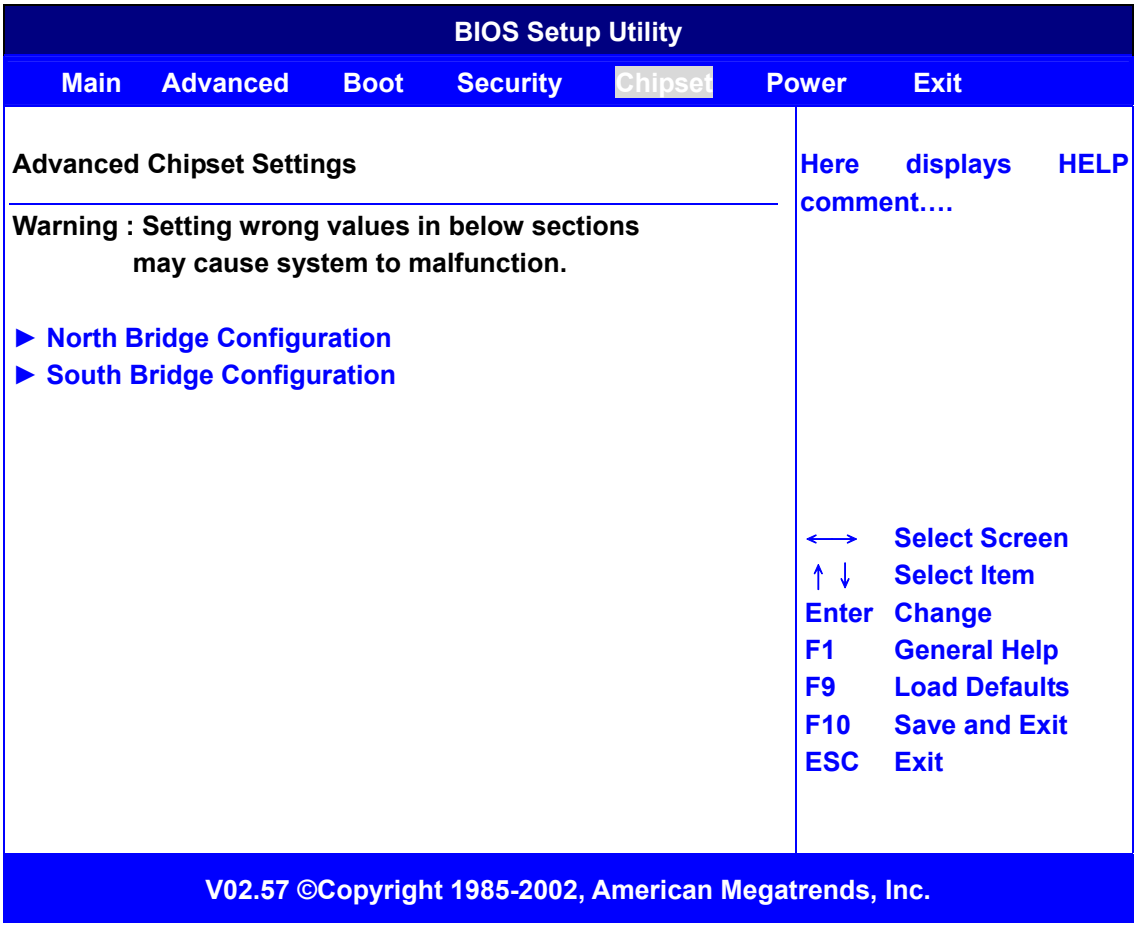
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press **Enter**, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press **Enter** after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press **Enter** after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

- **Removing the Password**

Highlight this item and type in the current password. At the next dialog box press **Enter** to disable password protection.

4.6 Setup submenu: Chipset


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
Advanced Chipset Settings
Warning : Setting wrong values in below sections
may cause system to malfunction.
► North Bridge Configuration
► South Bridge Configuration
Here displays HELP comment….
←→ Select Screen
↑ ↓ Select Item
Enter Change
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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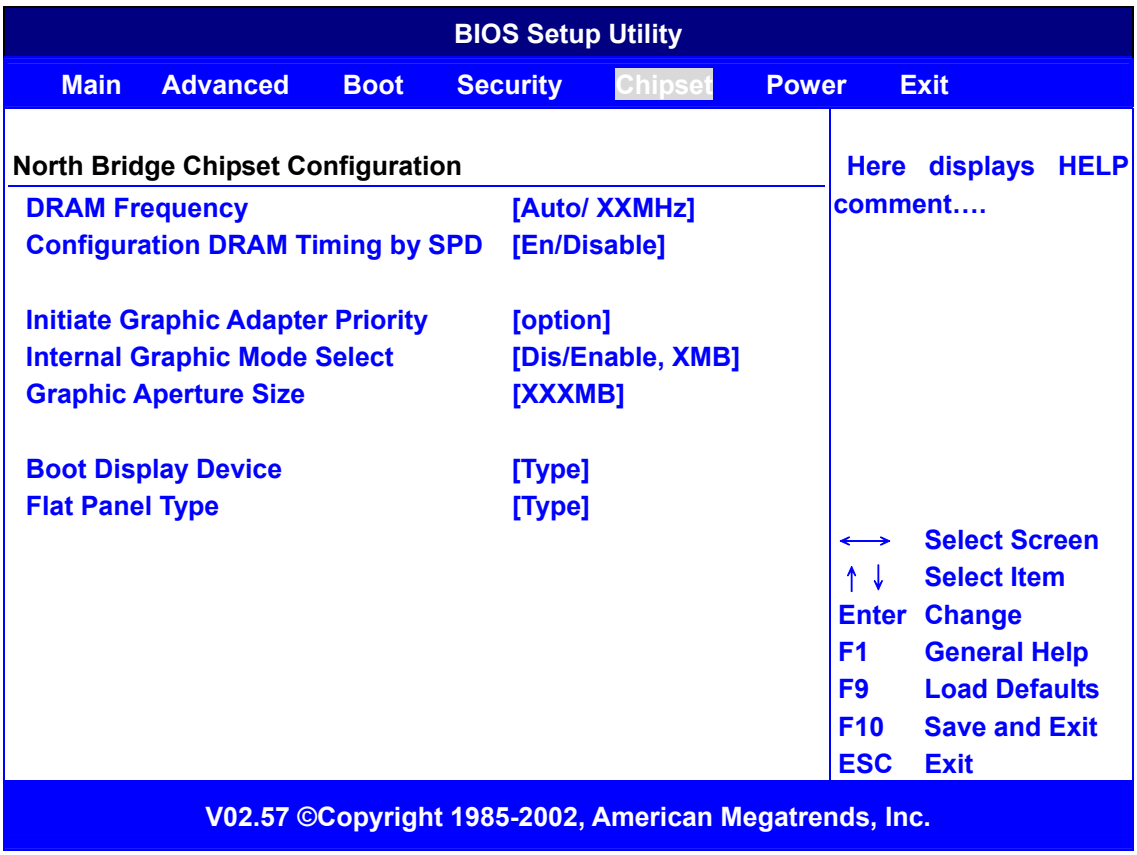
4.6.1 North Bridge Chipset Configuration


BIOS Setup Utility
Main Advanced Boot Security Chipset Power Exit
North Bridge Chipset Configuration
DRAM Frequency [Auto/ XXMHz]
Configuration DRAM Timing by SPD [En/Disable]
Initiate Graphic Adapter Priority [option]
Internal Graphic Mode Select [Dis/Enable, XMB]
Graphic Aperture Size [XXXMB]
Boot Display Device [Type]
Flat Panel Type [Type]
Here displays HELP comment….
↔ Select Screen
↑ ↓ Select Item
Enter Change
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit
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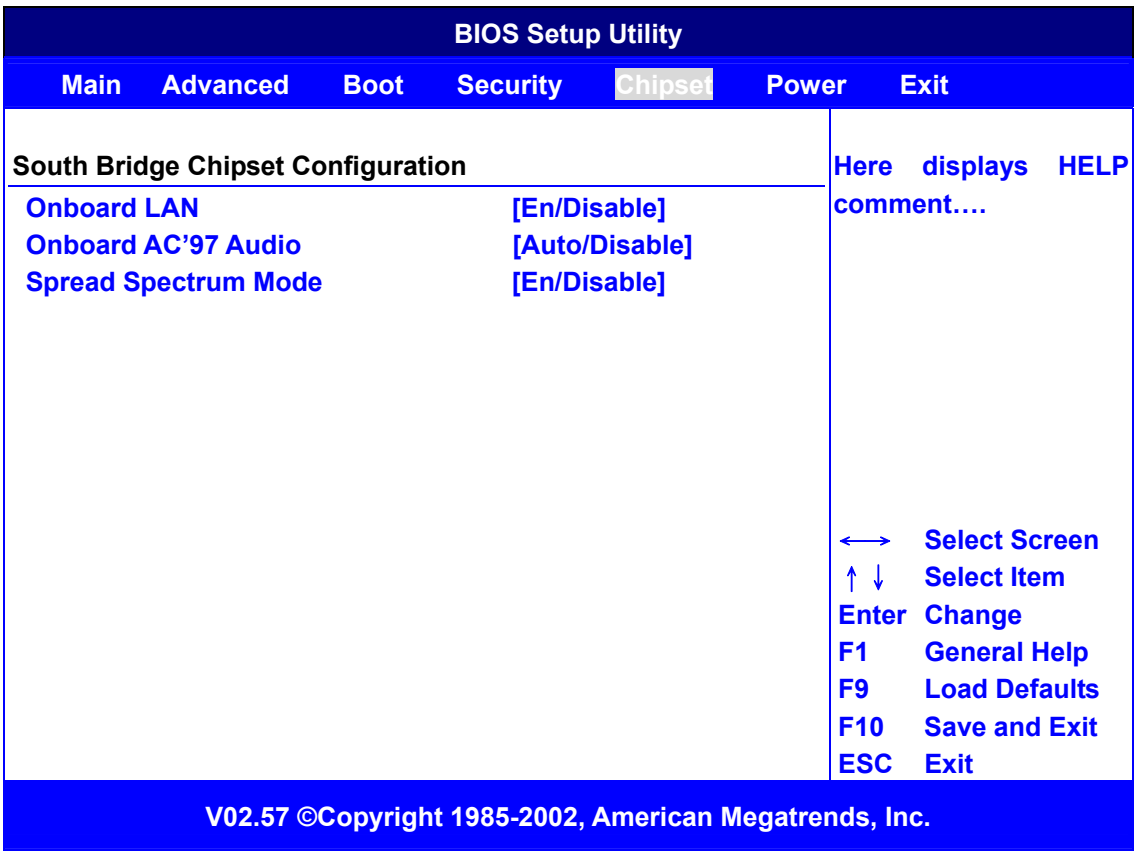
- **Options summary**

DRAM Frequency	200 MHz	
	266 MHz	
	333 MHz	
	Auto	Optimal Default, Failsafe Default
This item allows user to change DRAM frequency manually.		
Configure DRAM Timing by SPD	Disable	
	Enable	Optimal Default, Failsafe Default
This item determines whether the system BIOS uses timing data in SPD or not.		
Initiate Graphic Adapter	Internal VGA	Optimal Default, Failsafe Default
	PCI/Int-VGA	
This item allows user to choose initiating priority of graphic adapters.		
Internal Graphic Mode Select	Disable	
	Enabled, 1MB~16MB	
	Enabled, 32MB	Optimal Default, Failsafe Default
This item selects the amount of system memory used by Internal graphic device.		

Graphic Aperture Size	64MB	Optimal Default, Failsafe Default
	128MB	
	256MB	
This item selects the size of AGP Aperture		
Boot Display Device	CRT	Optimal Default, Failsafe Default
	LFP	
	CRT+LFP	
This item selects which device to display when booting.		
Flat Panel Type	640x480LVDS	Optimal Default, Failsafe Default
	800x600LVDS	
	1024x768LVDS 24bits	
	1280x10240LVDS	
	1400x1050LVDS	
	1024x768LVDS 18bits	
	1600x1200LVDS	
	1280x1024 48bits	
	800x600 24bits	
	800x600 18bits	
	1024x768 36bits	
	640x480LVDS	
This item selects current LFP type.		

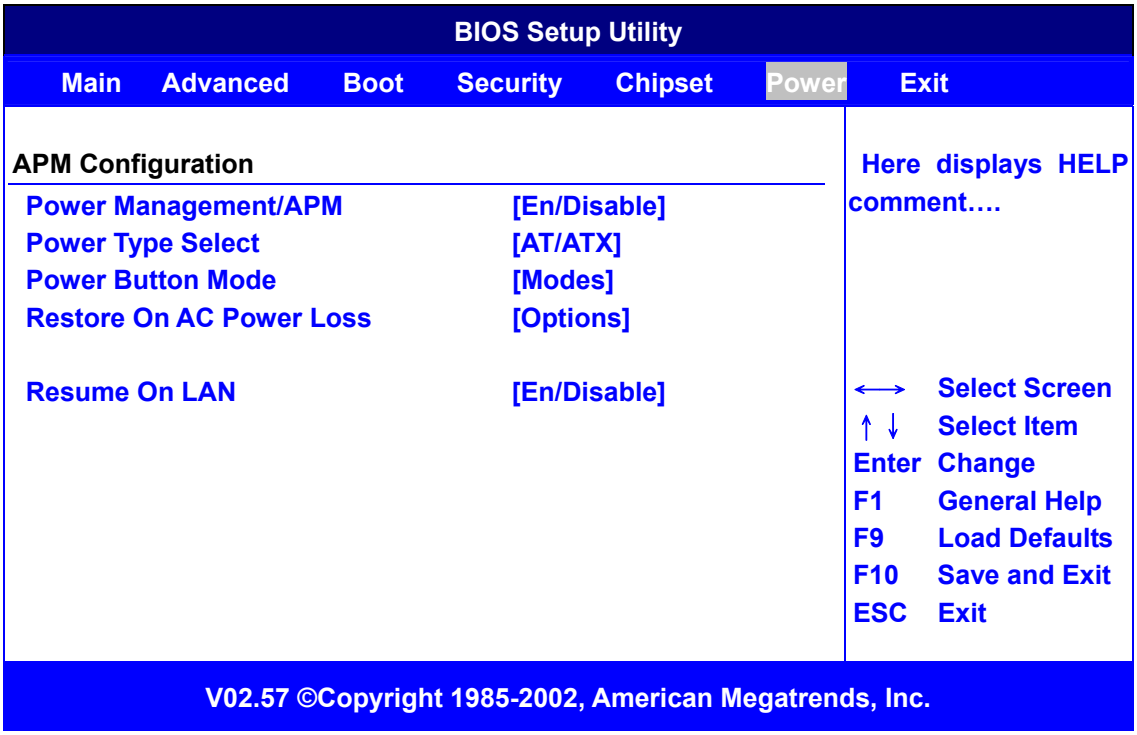
4.6.2 South Bridge Chipset Configuration



- **Options summary**

Onboard LAN	Disable	
	Enable	Optimal Default, Failsafe Default
This item en/disables onboard LAN.		
Onboard AC'97 Audio	Disable	
	Auto	Optimal Default, Failsafe Default
This item en/disables onboard AC'97 Audio.		
Spread Spectrum Mode	Disable	Optimal Default, Failsafe Default
	Enable	
This item en/disables spread spectrum.		

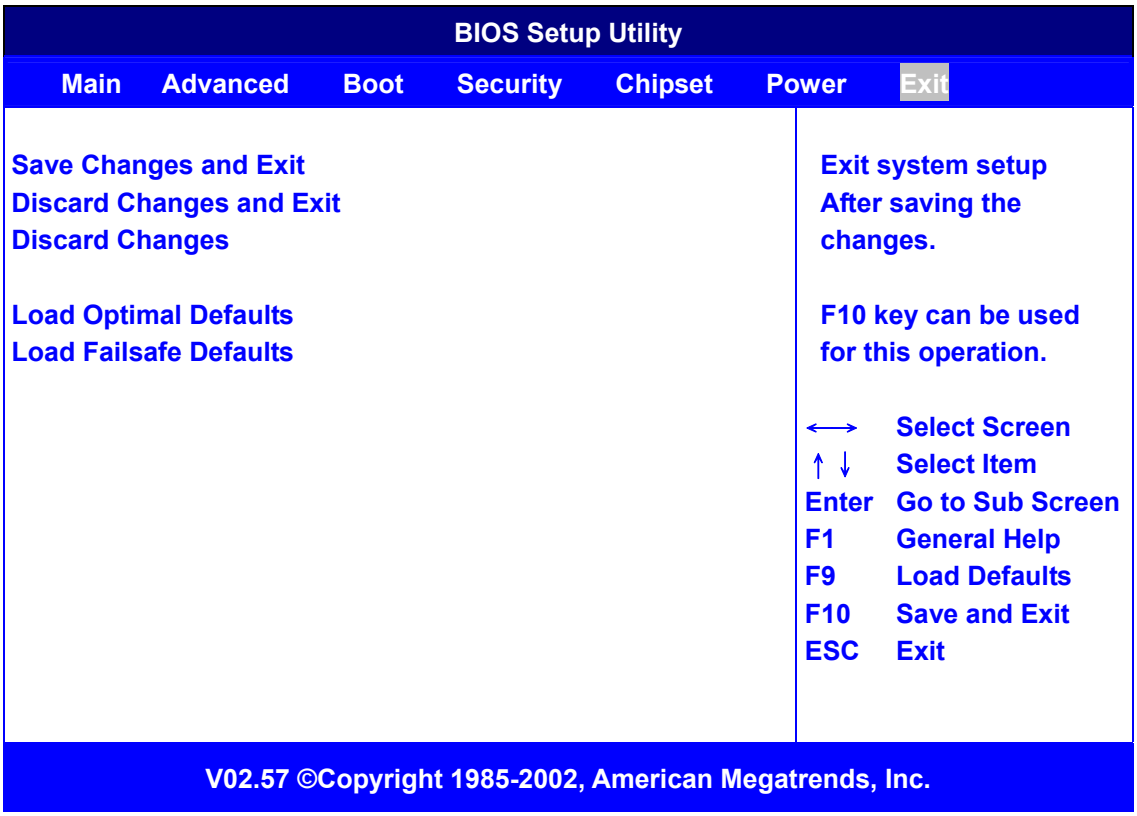
4.7 Setup submenu: Power



- **Options summary**

Power Management/APM	Disable	
	Enabled	Optimal Default, Failsafe Default
This Item en/disables APM		
Power Type Select	AT	
	ATX	Optimal Default, Failsafe Default
This item selects power type.		
Power Button Mode	On/Off	Optimal Default, Failsafe Default
	Suspend	
This item selects which state to go when power button is pressed.		
Restore On AC Power Loss	Power On	
	Power Off	
	Last State	Optimal Default, Failsafe Default
This item selects which state to go when the power restores after AC power loss.		
Resume On Ring	Disable	Optimal Default, Failsafe Default
	Enabled	
This item en/disables resume on ring event.		

4.8 Setup submenu: Exit



- **Load Optimal Defaults**

If you highlight this item and press **Enter**, a dialog box asks if you want to install optimal settings for all the items in the Setup utility. Select the **[OK]** item to indicate yes, and then press **Enter** to install the optimal settings. **[F9]** key can be used for this operation.

- **Save Changes and Exit**

Highlight this item and press **Enter** to save any changes that you have made in the Setup utility and exit the Setup utility. When the Save Settings and Exit dialog box appears, select **[OK]** item to save the changes and exit, or press **[Cancel]** to return to the setup main menu. **[F10]** key can be used for this operation.

- **Discard Changes and Exit**

Highlight this item and press **Enter** to discard any changes that you have made in the Setup utility and exit the Setup utility. When the Exit Discarding Changes dialog box appears, press **[OK]** to discard changes and exit, or press **[Cancel]** to return to the setup main menu. **[ESC]** key can be used for this operation.

- **Discard Changes**

If you highlight this item and press **Enter**, a dialog box asks if you want to discard the settings changes for all the items in the Setup utility. Select the **[OK]** item to indicate yes, and then press **Enter** to bypass the optimal settings changes

- **Load Failsafe Defaults**

Load Failsafe Default values for all the setup questions. **[F8]** key can be used for this operation.

Appendix A Address Mapping

A.1 I/O Address Map

I/O Address	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-OFF	Math Coprocessor
170-1F7	BUS Master PCI IDE Controller
278-27F	Parallel Printer Port 2
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	AGP Graphic Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
443	Watchdog timer enable
480-48F	PCI BUS

A.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER

C0000-CFFFF	VGA BIOS
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

A.3 IRQ Mapping Chart

IRQ0	System Timer	IRQ8	RTC CMOS clock
IRQ1	Keyboard	IRQ9	AC97 AUDIO
IRQ2	IRQ Controller	IRQ10	COM4
IRQ3	COM2	IRQ11	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	USB	IRQ13	FPU
IRQ6	Floppy Disk Controller	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

A.4 DMA Channel Assignment

Channel	**Function**
0	Available
1	Available
2	Floppy disk
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix B Digital I/O

One characteristic of digital circuit is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. That's why we design 1-bit digital inputs and 2-bit digital outputs on the FIR-ULV600-DVR.

Digital Input and Output, generally, are control signals. You can use these signals to control external devices that needs On/Off circuit or TTL devices. You can read or write data to the selected address to enable the function of digital IO.

- **DIO control:**

Output port address: 280H
Output pin0: bit 0
Output pin1: bit 1

Example: out 280, 0 --→ set output pin 0,1 to low
out 280,03 --→ set output pin 0,1 to high

Input port address: 281H
Input pin0: bit 0

Example: in 281 --→ read input pin 0
Temperature